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A

HISTORY OF THE EARTH,

AND

ANIMATED NATURE.

BY OLIVER GOLDSMITH, M.B.

Illustrated with Copperplates.

A NEW EDITION, WITH CORRECTIONS AND ADDITIONS,

IN SIX VOLUMES.

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A

HISTORY

OF

ANIMALS.

CHAPTER I.

OF SLEEP AND HUNGER.

As man, in all the privileges he enjoys, and the powers he is invested with, has a superiority over all other animals, so in his necessities he seems inferior to the meanest of them all. Nature has brought him into life with a greater variety of wants and infirmities than the rest of her creatures, unarmed in the midst of enemies. The lion has natural arms, the bear natural clothing; but man is destitute of all such advantages, and, from the superiority of his mind alone, he is to supply the deficiency. The number of his wants, however, were merely given in order to multiply the number of his enjoyments; since the possibility of being deprived of any good, teaches him the value of its possession. Were man born with those advantages which he learns to possess by industry, he would very probably enjoy them with a blunter relish: it is by being naked, that

he knows the value of a covering; it is by being exposed to the weather, that he learns the comforts of an habitation. Every want thus becomes a means of pleasure in the redressing; and the animal that has most desires, may be said to be capable of the greatest variety of happiness.

Beside the thousand imaginary wants peculiar to man, there are two which he has in common with all other animals, and which he feels in a more necessary manner than they. These are the wants of sleep and hunger. Every animal that we are acquainted with, seems to endure the want of these with much less injury to health than man; and some are most surprisingly patient in sustaining both. The little domestic animals that we keep about us, may often set a lesson of calm resignation, in supporting want and watchfulness, to the boasted philosopher. They receive their pittance at uncertain intervals, and wait its coming with cheerful expectation. We have instances of the dog, and the cat, living in this manner without food for several days; and yet still preserving their attachment to the tyrant that oppresses them, still ready to exert their little services for his amusement or defence. But the patience of these is nothing to what the animals of the forest endure. As these mostly live upon accidental carnage, so they are often known to remain without food for several weeks together. Nature, kindly solicitous for their support, has also contracted their stomachs, to suit them for their precarious way of living; and kindly, while it abridges the

banquet, lessens the necessity of providing for it. But the meaner tribes of animals are made still more capable of sustaining life without food, many of them remaining in a state of torpid indifference till their prey approaches, when they jump upon and seize it. In this manner, the snake, or the spider, continue for several months together to subsist upon a single meal; and some of the butterfly kinds live upon little or nothing. But it is very different with man: his wants daily make their importunate demands; and it is known that he cannot continue to live many days without eating, drinking, and sleeping.

Hunger is a much more powerful enemy to man than watchfulness, and kills him much sooner. It may be considered as a disorder that food removes; and that would quickly be fatal, without its proper antidote. In fact, it is so terrible to man, that to avoid it he even encounters certain death; and, rather than endure its tortures, exchanges them for immediate destruction. However, by what I have been told, it is much more dreadful in its approaches than in its continuance; and the pains of a famishing wretch decrease as his strength diminishes. In the beginning, the desire of food is dreadful indeed, as we know by experience; for there are few who have not in some degree felt its approaches. But, after the first or second day, its tortures become less terrible, and a total insensibility at length comes kindly in to the poor wretch's assistance. I have talked with the captain of a ship, who was one of six that endured it in its extremities; and who

was the only person that had not lost his senses when they received accidental relief. He assured me, his pains at first were so great as to be often tempted to eat a part of one of the men who died, and which the rest of his crew actually for some time lived upon: he said, that during the continuance of this paroxysm, he found his pains insupportable; and was desirous, at one time, of anticipating that death which he thought inevitable: but his pains, he said, gradually decreased after the sixth day, (for they had water in the ship, which kept them alive so long), and then he was in a state rather of languor than desire; nor did he much wish for food, except when he saw others eating, and that for a while revived his appetite, though with diminished importunity. The latter part of the time, when his health was almost destroyed, a thousand strange images rose upon his mind, and every one of his senses began to bring him wrong information. The most fragrant perfumes appeared to him to have a fetid smell, and every thing he looked at took a greenish hue, and sometimes a yellow. When he was presented with food by the ship's company that took him and his men up, four of whom died shortly after, he could not help looking upon it with loathing, instead of desire; and it was not till after four days that his stomach was brought to its natural tone, when the violence of his appetite returned with a sort of canine eagerness.

Thus dreadful are the effects of hunger; and yet, when we come to assign the cause that produces them, we find the subject involved in doubt

and intricacy. This longing eagerness is, no doubt, given for a very obvious purpose; that of replenishing the body, wasted by fatigue and perspiration. Were not men stimulated by such a pressing monitor, they might be apt to pursue other amusements, with a perseverance beyond their power; and forget the useful hours of refreshment, in those more tempting ones of pleasure. But hunger makes a demand that will not be refused; and, indeed, the generality of mankind seldom await the call.

Hunger has been supposed by some to arise from the rubbing of the coats of the stomach against each other, without having any intervening substance to prevent their painful attrition. Others have imagined that its juices, wanting their necessary supply, turn acrid, or, as some say, pungent; and thus fret its internal coats, so as to produce a train of the most uneasy sensations. Boerhaave, who established his reputation in physic by uniting the conjectures of all those that preceded him, ascribes hunger to the united effects of both these causes; and asserts, that the pungency of the gastric juices, and the attrition of its coats against each other, cause those pains which nothing but food can remove. These juices continuing still to be separated in the stomach, and every moment becoming more acrid, mix with the blood, and infect the circulation: the circulation being thus contaminated, becomes weaker, and more contracted; and the whole nervous frame sympathizing, an hectic fever, and sometimes madness, is produced; in

which state the faint wretch expires. In this manner, the man who dies by hunger may be said to be poisoned by the juices of his own body; and is destroyed less by the want of nourishment, than by the vitiated qualities of that which he had already taken.

However this may be, we have but few instances of men dying, except at sea, of absolute hunger; the decline of those unhappy creatures who are destitute of food, at land, being more slow and unperceived. These, from often being in need, and as often receiving an accidental supply, pass their lives between surfeiting and repining; and their constitution is impaired by insensible degrees. Man is unfit for a state of precarious expectation. That share of provident precaution which incites him to lay up stores for a distant day, becomes his torment when totally unprovided against an immediate call. The lower race of animals, when satisfied for the instant moment, are perfectly happy: but it is otherwise with man; his mind anticipates distress, and feels the pangs of want even before it arrests him. Thus the mind being continually harassed by the situation, it at length influences the constitution, and unfits it for all its functions. Some cruel disorder, but no way like hunger, seizes the unhappy sufferer; so that almost all those men who have thus long lived by chance, and whose every day may be considered as an happy escape from famine, are known at last to die, in reality, of a disorder caused by hunger; but which, in the common language, is often

called a *broken heart.* Some of these I have known myself, when very little able to relieve them; and I have been told, by a very active and worthy magistrate, that the number of such as die in London for want, is much greater than one would imagine—I think he talked of two thousand in a year.

But how numerous soever those who die of hunger may be, many times greater, on the other hand, are the number of those who die by repletion. It is not the province of the present page to speculate, with the physician, upon the danger of surfeits; or with the moralist, upon the nauseousness of gluttony; it will only be proper to observe, that as nothing is so prejudicial to health as hunger by constraint, so nothing is more beneficial to the constitution than voluntary abstinence. It was not without reason that religion enjoined this duty; since it answered the double purpose of restoring the health oppressed by luxury, and diminished the consumption of provisions; so that a part might come to the poor. It should be the business of the legislature, therefore, to enforce this divine precept; and thus, by restraining one part of mankind in the use of their superfluities, to consult for the benefit of those who want the necessaries of life. The injunctions for abstinence are strict over the whole Continent, and were rigorously observed, even among ourselves, for a long time after the Reformation. Queen Elizabeth, by giving her commands upon this head the air of a political injunction, lessened in a great measure, and in

my opinion very unwisely, the religious force of the obligation. She enjoined that her subjects should fast from flesh on Fridays and Saturdays; but at the same time declared, that this was not commanded from motives of religion, as if there were any differences in meats, but merely to favour the consumption of fish, and thus to multiply the number of mariners; and also to spare the stock of sheep, which might be more beneficial in another way. In this manner the injunction defeated its own force; and this most salutary law became no longer binding, when it was supposed to come purely from man. How far it may be enjoined in the Scriptures, I will not take upon me to say; but this may be asserted, that if the utmost benefit to the individual, and the most extensive advantage to society, serve to mark any institution as of Heaven, this of abstinence may be reckoned among the foremost.

Were we to give a history of the various benefits that have arisen from this command, and how conducive it has been to long life, the instances would fatigue with their multiplicity. It is surprising to what a great age the primitive Christians of the East, who retired from persecution in the deserts of Arabia, continued to live in all the bloom of health, and yet all the rigours of abstemious discipline. Their common allowance, as we are told, for four-and-twenty hours, was twelve ounces of bread, and nothing but water. On this simple beverage, St Anthony is said to have lived an hundred and five years; James the hermit, an hundred and four; Arsenius, tutor to

the emperor Arcadius, an hundred and twenty; St Epiphanius, an hundred and fifteen; Simeon, an hundred and twelve; and Rombald, an hundred and twenty. In this manner did these holy temperate men live to an extreme old age, kept cheerful by strong hopes, and healthful by moderate labour.

Abstinence which is thus voluntary, may be much more easily supported than constrained hunger. Man is said to live without food for seven days; which is the usual limit assigned him; and, perhaps, in a state of constraint this is the longest time he can survive the want of it. But in cases of voluntary abstinence, of sickness, or sleeping, he has been known to live much longer.

In the records of the Tower, there is an account of a Scotchman, imprisoned for felony, who, for the space of six weeks, took not the least sustenance, being exactly watched during the whole time; and for this he received the king's pardon.

When the American Indians undertake long journeys, and when, consequently, a stock of provisions sufficient to support them the whole way would be more than they could carry, in order to obviate this inconvenience, instead of carrying the necessary quantity, they contrive a method of palliating their hunger, by swallowing pills made of calcined shells and tobacco. These pills take away all appetite, by producing a temporary disorder in the stomach; and, no doubt, the frequent repetition of this wretched expedient must

at last be fatal. By these means, however, they continue several days without eating, cheerfully bearing such extremes of fatigue and watching, as would quickly destroy men bred up in a greater state of delicacy. For those arts by which we learn to obviate our necessities, do not fail to unfit us for their accidental encounter.

Upon the whole, therefore, man is less able to support hunger than any other animal; and he is not better qualified to support a state of watchfulness. Indeed, sleep seems much more necessary to him than to any other creature; as, when awake, he may be said to exhaust a greater proportion of the nervous fluid, and, consequently, to stand in need of an adequate supply. Other animals, when most awake, are but little removed from a state of slumber; their feeble faculties, imprisoned in matter, and rather exerted by impulse than deliberation, require sleep rather as a cessation from motion than from thinking. But it is otherwise with man: his ideas, fatigued with their various excursions, demand a cessation, not less than the body, from toil; and he is the only creature that seems to require sleep from double motives; not less for the refreshment of the mental, than of the bodily frame.

There are some lower animals, indeed, that seem to spend the greatest part of their lives in sleep; but, properly speaking, the sleep of such may be considered as a kind of death, and their waking, a resurrection. Flies and insects are said to be asleep, at a time that all the vital motions have ceased; without respiration, without

any circulation of their juices, if cut in pieces they do not awake, nor does any fluid ooze out at the wound. These may be considered rather as congealed than as sleeping animals; and their rest during winter, rather as a cessation from life than a necessary refreshment: But in the higher races of animals, whose blood is not thus congealed and thawed by heat, these all bear the want of sleep much better than man; and some of them continue a long time without seeming to take any refreshment from it whatsoever.

But man is more feeble: he requires its due return; and if it fails to pay the accustomed visit, his whole frame is in a short time thrown into disorder; his appetite ceases; his spirits are dejected; his pulse becomes quicker and harder; and his mind, abridged of its slumbering visions, begins to adopt waking dreams. A thousand strange phantoms arise, which come and go without his will: these, which are transient in the beginning, at last take firm possession of the mind, which yields to their dominion, and, after a long struggle, runs into confirmed madness. In that horrid state, the mind may be considered as a city without walls, open to every insult, and paying homage to every invader: every idea that then starts with any force becomes a reality; and the reason, over-fatigued with its former importunities, makes no head against the tyrannical invasion, but submits to it from mere imbecility.

But it is happy for mankind that this state of inquietude is seldom driven to an extreme, and that there are medicines which seldom fail to give

relief. However, man finds it more difficult than any other animal to procure sleep; and some are obliged to court its approaches for several hours together, before they incline to rest. It is in vain that all light is excluded, that all sounds are removed, that warmth and softness conspire to invite it; the restless and busy mind still retains its former activity; and reason, that wishes to lay down the reins, in spite of herself is obliged to maintain them. In this disagreeable state, the mind passes from thought to thought, willing to lose the distinctness of perception, by increasing the multitude of the images. At last, when the approaches of sleep are near, every object of the imagination begins to mix with that next it; their outlines become in a manner rounder; a part of their distinctions fade away; and sleep, that ensues, fashions out a dream from the remainder.

If then it should be asked from what cause this state of repose proceeds, or in what manner sleep thus binds us for several hours together, I must fairly confess my ignorance, although it is easy to tell what philosophers say upon the subject. Sleep, says one of them,* consists in a scarcity of spirits, by which the orifices or pores of the nerves in the brain, through which the spirits used to flow into the nerves, being no longer kept open by the frequency of the spirits, shut of themselves; thus the nerves, wanting a new supply of spirits, become lax, and unfit to convey any impression to the brain. All this, however, is explaining a

* Rohault.

very great obscurity by somewhat more obscure: leaving, therefore, those spirits to open and shut the entrances to the brain, let us be contented with simply enumerating the effects of sleep upon the human constitution.

In sleep, the whole nervous frame is relaxed, while the heart and the lungs seem more forcibly exerted. This fuller circulation produces also a swelling of the muscles, as they always find who sleep with ligatures on any part of their body. This increased circulation also may be considered as a kind of exercise, which is continued through the frame; and by this the perspiration becomes more copious, although the appetite for food is entirely taken away. Too much sleep dulls the apprehension, weakens the memory, and unfits the body for labour. On the contrary, sleep too much abridged emaciates the frame, produces melancholy, and consumes the constitution. It requires some care, therefore, to regulate the quantity of sleep, and just to take as much as will completely restore nature, without oppressing it. The poor, as Otway says, sleep little; forced, by their situation, to lengthen out their labour to their necessities, they have but a short interval for this pleasing refreshment; and I have ever been of opinion, that bodily labour demands a less quantity of sleep than mental. Labourers and artisans are generally satisfied with about seven hours; but I have known some scholars who usually slept nine, and perceived their faculties no way impaired by over-sleeping.

The famous Philip Barretiere, who was considered as a prodigy of learning at the age of fourteen, was known to sleep regularly twelve hours in the twenty-four; the extreme activity of his mind when awake in some measure calling for an adequate alternation of repose: and I am apt to think, that when students stint themselves in this particular, they lessen the waking powers of the imagination, and weaken its most strenuous exertions. Animals that seldom think, as was said, can very easily dispense with sleep; and of men, such as think least, will very probably be satisfied with the smallest share. A life of study, it is well known, unfits the body for receiving this gentle refreshment; the approaches of sleep are driven off by thinking: when, therefore, it comes at last, we should not be too ready to interrupt its continuance.

Sleep is, indeed, to some a very agreeable period of their existence: and it has been a question in the schools, which was most happy, the man who was a beggar by night, and a king by day; or he who was a beggar by day, and a king by night? It is given in favour of the nightly monarch by him who first started the question; for the dream, says he, gives the full enjoyment of the dignity, without its attendant inconveniencies; while, on the other hand, the king who supposes himself degraded, feels all the misery of his fallen fortune, without trying to find the comforts of his humble situation. Thus by day both states have their peculiar distresses; but by night the exalted beggar is perfectly blessed, and the king com-

pletely miserable. All this, however, is rather fanciful than just: the pleasure dreams can give us, seldom reaches to our waking pitch of happiness; the mind often, in the midst of its highest visionary satisfactions, demands of itself, whether it does not owe them to a dream, and frequently awakes with the reply.

But it is seldom, except in cases of the highest delight, or the most extreme uneasiness, that the mind has power thus to disengage itself from the dominion of fancy. In the ordinary course of its operations, it submits to those numberless fantastic images that succeed each other; and which, like many of our waking thoughts, are generally forgotten. Of these, however, if any, by their oddity, or their continuance, affect us strongly, they are then remembered; and there have been some who felt their impressions so strongly, as to mistake them for realities, and to rank them among the past actions of their lives.

There are others upon whom dreams seem to have a very different effect; and who, without seeming to remember their impressions the next morning, have yet shewn, by their actions during sleep, that they were very powerfully impelled by their dominion. We have numberless instances of such persons, who while asleep have performed many of the ordinary duties to which they have been accustomed when waking; and, with a ridiculous industry, have completed by night what they failed doing by day. We are told, in the German Ephemerides, of a young student, who being enjoined a severe exercise by his tutor,

went to bed despairing of accomplishing it. The next morning awaking, to his great surprise he found the task fairly written out, and finished in his own hand-writing. He was at first, as the account has it, induced to ascribe this strange production to the operation of an infernal agent; but his tutor, willing to examine the affair to the bottom, set him another exercise, still more severe than the former, and took precautions to observe his conduct the whole night. The young gentleman, upon being so severely tasked, felt the same inquietude that he had done on the former occasion; went to bed gloomy and pensive, pondering on the next day's duty, and after some time fell asleep. But shortly after, his tutor, who continued to observe him from a place that was concealed, was surprised to see him get up, and very deliberately go to the table; where he took out pen, ink, and paper, drew himself a chair, and sat very methodically to thinking: it seems that his being asleep only served to strengthen the powers of his imagination; for he very quickly and easily went through the task assigned him, put his chair aside, and then returned to bed to take out the rest of his nap. What credit we are to give to this account, I will not pretend to determine; but this may be said, that the book from whence it is taken has some good marks of veracity; for it is very learned and very dull, and is written in a country noted, if not for truth, at least for want of invention.

The ridiculous history of Arlotto is well known, who has had a volume written, containing a nar-

rative of the actions of his life, not one of which was performed while he was awake. He was an Italian Franciscan friar, extremely rigid in his manners, and remarkably devout and learned in his daily conversation. By night, however, and during his sleep, he played a very different character from what he did by day, and was often detected in very atrocious crimes. He was at one time detected in actually attempting a rape, and did not awake till the next morning, when he was surprised to find himself in the hands of justice. His brothers of the convent often watched him while he went very deliberately into the chapel, and there attempted to commit sacrilege. They sometimes permitted him to carry the chalice and the vestments away into his own chamber, and the next morning amused themselves at the poor man's consternation for what he had done. But of all his sleeping transgressions, that was the most ridiculous in which he was called to pray for the soul of a person departed. Arlotto, after having devoutly performed his duty, retired to a chamber which was shewn him to rest; but there he had no sooner fallen asleep, than he began to reflect that the dead body had got a ring upon one of the fingers, which might be useful to him: accordingly, with a pious resolution of stealing it, he went down, undressed as he was, into a room full of women, and, with great composure, endeavoured to seize the ring. The consequence was, that he was taken before the inquisition for witchcraft; and the poor creature had like to have been condemned, till his peculiar character acci-

dentally came to be known: however, he was ordered to remain for the rest of his life in his own convent, and upon no account whatsoever to stir abroad.

What are we to say of such actions as these, or how account for this operation of the mind in dreaming? It should seem, that the imagination by day, as well as by night, is always employed; and that often, against our wills, it intrudes where it is least commanded or desired. While awake, and in health, this busy principle cannot much delude us: it may build castles in the air, and raise a thousand phantoms before us, but we have every one of the senses alive to bear testimony to its falsehood. Our eyes shew us that the prospect is not present; our hearing and our touch depose against its reality; and our taste and smelling are equally vigilant in detecting the impostor. Reason, therefore, at once gives judgment upon the cause; and the vagrant intruder, imagination, is imprisoned, or banished from the mind. But in sleep it is otherwise: having, as much as possible, put our senses from their duty, having closed the eyes from seeing, and the ears, taste, and smelling, from their peculiar functions, and having diminished even the touch itself, by all the arts of softness, the imagination is then left to riot at large, and to lead the understanding without an opposer. Every incursive idea then becomes a reality; and the mind, not having one power that can prove the illusion, takes them for truths. As, in madness, the senses, from struggling with the imagination, are at length forced

to submit, so in sleep they seem for a while soothed into the like submission; the smallest violence exerted upon any one of them, however, rouses all the rest in their mutual defence; and the imagination, that had for a while told its thousand falsehoods, is totally driven away, or only permitted to pass under the custody of such as are every moment ready to detect its imposition.

CHAPTER II.

OF SEEING.*

"HAVING mentioned the senses as correcting the errors of the imagination, and as forcing it, in some measure, to bring us just information, it will naturally follow that we should examine the nature of those senses themselves; we shall thus be enabled to see how far they also impose on us, and how far they contribute to correct each other. Let it be observed, however, that in his we are neither giving a treatise of optics nor phonics, but a history of our own perceptions; and to those we chiefly confine ourselves."

The eyes very soon begin to be formed in the human embryo, and in the chicken also. Of all the parts which the animal has double, the eyes

* This chapter is taken from M. Buffon. I believe the reader will readily excuse any apology; and, perhaps, may wish that I had taken this liberty much more frequently. What I add is marked, as in a former instance, with inverted commas.

are produced the soonest, and appear the most prominent. It is true, indeed, that in viviparous animals, and particularly in man, they are not so large in proportion, at first, as in the oviparous kinds; nevertheless, they are more speedily developed, when they begin to appear, than any other parts of the body. It is the same with the organ of hearing: the little bones that compose the internal parts of the ear are entirely formed, before the other bones, though much larger, have acquired any part of their growth or solidity. Hence it appears, that those parts of the body which are furnished with the greatest quantity of nerves, are the first in forming. Thus the brain, and the spinal marrow, are the first seen begun in the embryo; and, in general, it may be said, that wherever the nerves go, or send their branches in great numbers, there the parts are soonest begun, and the most completely finished.

If we examine the eyes of a child some hours, or even some days after its birth, it will be easily discerned that it, as yet, makes no use of them. The humours of the organ not having acquired a sufficient consistence, the rays of light strike but confusedly upon the retina, or expansion of the nerves at the back of the eye. It is not till about a month after they are born, that children fix them upon objects; for, before that time they turn them indiscriminately every where without appearing to be affected by any. At six or seven weeks old, they plainly discover a choice in the objects of their attention; they fix

their eyes upon the most brilliant colours, and seem peculiarly desirous of turning them towards the light. Hitherto, however, they only seem to fortify the organ for seeing distinctly; but they have still many illusions to correct.

The first great error in vision is, that the eye inverts every object; and it in reality appears to the child, until the touch has served to undeceive it, turned upside down. A second error in vision is, that every object appears double. The same object forms itself distinctly upon each eye; and is consequently seen twice. This error, also, can only be corrected by the touch; and although, in reality, every object we see appears inverted and doubled, yet the judgment, and habit, have so often corrected the sense, that we no longer submit to its imposition, but see every object in its just position, the very instant it appears. Were we, therefore, deprived of feeling, our eyes would not only misrepresent the situation, but also the number of all things round us.

To convince us that we see objects inverted, we have only to observe the manner in which images are represented, coming through a small hole in a darkened room. If such a small hole be made in a dark room, so that no light can come in but through it, all the objects without will be painted on the wall behind, but in an inverted position, their heads downwards. For as all the rays which pass from the different parts of the object without, cannot enter the hole in the same extent which they had in leaving the object, since, if so, they would require the aper-

ture to be as large as the object; and as each part, and every point of the object, sends forth the image of itself on every side, and the rays, which form these images, pass from all points of the object as from so many centres; so such only can pass through the small aperture as come in opposite directions. Thus the little aperture becomes a centre for the entire object; through which the rays from the upper parts, as well as from the lower parts of it, pass in converging directions; and, consequently, they must cross each other in the central point, and thus paint the objects behind, upon the wall, in an inverted position.

It is in like manner easy to conceive, that we see all objects double, whatever our present sensations may seem to tell us to the contrary. For, to convince us of this, we have only to compare the situation of any one object on shutting one eye, and then compare the same situation by shutting the other. If, for instance, we hold up a finger, and shut the right eye, we shall find it hide a certain part of the room; if again we close the other eye, we shall find that part of the room visible, and the finger seeming to cover a part of the room that had been visible before. If we open both eyes, however, the part covered will appear to lie between the two extremes. But the truth is, we see the object our finger had covered, one image of it to the right, and the other to the left; but, from habit, suppose that we see but one image placed between both, our sense of feeling having corrected the errors of

sight. And thus also, if, instead of two eyes, we had two hundred, we should fancy the objects increased in proportion, until one sense had corrected the errors of another.

"The having two eyes might thus be said to be rather an inconvenience than a benefit, since one eye would answer the purposes of sight as well, and be less liable to illusion. But it is otherwise; two eyes greatly contribute, if not to distinct, at least to extensive vision.* When an object is placed at a moderate distance, by the means of both eyes we see a larger share of it than we possibly could with one; the right eye seeing a greater portion of its right side, and the left eye of its correspondent side. Thus both eyes, in some measure, see round the object; and it is this that gives it, in nature, that bold relievo, or swelling, with which they appear, and which no painting, how exquisite soever, can attain to. The painter must be contented with shading on a flat surface; but the eyes, in observing nature, do not behold the shading only, but a part of the figure also, that lies behind these very shadings, which gives it that swelling which painters so ardently desire, but can never fully imitate.

"There is another defect, which either of the eyes, taken singly, would have, but which is corrected by having the organ double. In either eye there is a point which has no vision whatsoever; so that if one of them only is employed in seeing, there is a part of the object to which it is always

* Leonardo da Vinci.

totally blind. This is that part of the optic nerve where its vein and artery run; which being insensible, that point of the object that is painted there must continue unseen. To be convinced of this, we have only to try a very easy experiment. If we take three black patches, and stick them upon a white wall, about a foot distance from each other, each about as high as the eye that is to observe them; then retiring six or seven feet back, and shutting one eye, by trying for some time we shall find, that while we distinctly behold the black spots that are to the right and left, that which is in the middle remains totally unseen. Or, in other words, when we bring that part of the eye where the optic artery runs, to fall upon the object, it will then become invisible. This defect, however, in either eye, is always corrected by both, since the part of the object that is unseen by one, will be very distinctly perceived by the other."

Beside the former defects, we can have no idea of distances from the sight, without the help of touch. Naturally, every object we see appears to be within our eyes; and a child, who has as yet made but little use of the sense of feeling, must suppose that every thing it sees makes a part of itself. Such objects are only seen more or less bulky as they approach or recede from its eyes; so that a fly that is near will appear larger than an ox at a distance. It is experience alone that can rectify this mistake; and a long acquaintance with the real size of every object, quickly assures us of the distance at which it is seen.

The last man in a file of soldiers appears in reality much less, perhaps ten times more diminutive, than the man next to us; however, we do not perceive this difference, but continue to think him of equal stature; for the numbers we have seen thus lessened by distance, and have found, by repeated experience, to be of the natural size when we come closer, instantly corrects the sense, and every object is perceived with nearly its natural proportion. But it is otherwise, if we observe objects in such situations as we have not had sufficient experience to correct the errors of the eye; if, for instance, we look at men from the top of a high steeple, they in that case appear very much diminished, as we have not had a habit of correcting the sense in that position.

Although a small degree of reflection will serve to convince us of the truth of these positions, it may not be amiss to strengthen them by an authority which cannot be disputed. Mr Cheselden having couched a boy of thirteen for a cataract, who had hitherto been blind, and thus at once having restored him to sight, curiously marked the progress of his mind upon that occasion. This youth, though he had been till then incapable of seeing, yet was not totally blind, but could tell day from night, as persons in his situation always may. He could also, with a strong light, distinguish black from white, and either from the vivid colour of scarlet; however, he saw nothing of the form of bodies, and, without a bright light, not even colours themselves. He was, at first, couched only in one of his eyes;

and, when he saw for the first time, he was so far from judging of distances, that he supposed his eyes touched every object that he saw, in the same manner as his hands might be said to feel them. The objects that were most agreeable to him were such as were of plain surfaces and regular figures; though he could as yet make no judgment whatever of their different forms, nor give a reason why one pleased him more than another. Although he could form some idea of colours during his state of blindness, yet that was not sufficient to direct him at present; and he could scarcely be persuaded that the colours he now saw were the same with those he had formerly conceived such erroneous ideas of. He delighted most in green; but black objects, as if giving him an idea of his former blindness, he regarded with horror. He had, as was said, no idea of forms; and was unable to distinguish one object from another, though never so different. When those things were shewn him which he had been formerly familiarized to by his feeling, he beheld them with earnestness, in order to remember them a second time; but, as he had too many to recollect at once, he forgot the greatest number; and for one he could tell, after seeing, there was a thousand he was totally unacquainted with. He was very much surprised to find that those things and persons he loved best were not the most beautiful to be seen; and even testified displeasure in not finding his parents so handsome as he conceived them to be. It was near two months before he could find that a picture resem-

bled a solid body. Till then, he only considered it as a flat surface variously shadowed; but when he began to perceive that these kind of shadings actually represented human beings, he then began to examine, by his touch, whether they had not the usual qualities of such bodies, and was greatly surprised to find what he expected a very unequal surface, to be smooth and even. He was then shewn a miniature picture of his father, which was contained in his mother's watch-case, and he readily perceived the resemblance; but asked, with great astonishment, how so large a face could be contained in so small a compass? it seemed as strange to him as if a bushel was contained in a pint vessel. At first, he could bear but a very small quantity of light, and he saw every object much greater than the life; but in proportion as he saw objects that were really large, he seemed to think the former were diminished; and although he knew the chamber where he was, was contained in the house, yet until he saw the latter, he could not be brought to conceive how a house could be larger than a chamber. Before the operation he had no great expectations from the pleasures he should receive from a new sense; he was only excited by the hopes of being able to read and write: he said, for instance, that he could have no greater pleasure in walking in the garden, with his sight, than he had without it, for he walked there at his ease, and was acquainted with all the walks. He remarked also, with great justice, that his former blindness gave him one advantage over

the rest of mankind, which was that of being able to walk in the night with confidence and security. But when he began to make use of his new sense, he seemed transported beyond measure. He said that every new object was a new source of delight, and that his pleasure was so great as to be past expression. About a year after, he was brought to Epsom, where there is a very fine prospect, with which he seemed greatly charmed; and he called the landscape before him a new method of seeing. He was couched in the other eye, a year after the former, and the operation succeeded equally well: when he saw with both eyes, he said that objects appeared to him twice as large as when he saw with but one; however, he did not see them doubled, or at least he shewed no marks as if he saw them so. Mr Cheselden mentions instances of many more that were restored to sight in this manner: they all seemed to concur in their perceptions with this youth; and they all seemed particularly embarrassed in learning how to direct their eyes to the objects they wished to observe.

In this manner it is that our feeling corrects the sense of seeing, and that objects which appear of very different sizes, at different distances, are all reduced by experience to their natural standard. "But not the feeling only, but also the colour and brightness of the object, contributes in some measure to assist us in forming an idea of the distance at which it appears.* Those

* M. Buffon gives a different theory, for which I must refer the reader to the original. That I have given, I take to be easy, and satisfactory enough.

which we see most strongly marked with light and shade, we readily know to be nearer than those on which the colours are more faintly spread, and that in some measure take a part of their hue from the air between us and them. Bright objects also are seen at a greater distance than such as are obscure; and most probably for this reason, that being less similar in colour to the air which interposes, their impressions are less effaced by it, and they continue more distinctly visible. Thus a black and distant object is not seen so far off as a bright and glittering one; and a fire by night is seen much farther off than by day."

The power of seeing objects at a distance is very rarely equal in both eyes. When this inequality is in any degree, the person so circumstanced then makes use only of one eye, shutting that which sees the least, and employing the other with all its power. And hence proceeds that awkward look which is known by the name of *strabism*.

There are many reasons to induce us to think that such as are near-sighted see objects larger than other persons; and yet the contrary is most certainly true, for they see them less. M. Buffon informs us that he himself is short-sighted, and that his left eye is stronger than his right. He has very frequently experienced, upon looking at any object, such as the letters of a book, that they appear less to the weakest eye; and that when he places the book so as that the letters appear double, the images of the left eye, which

is strongest, are greater than those of the right, which is the most feeble. He has examined several others who were in similar circumstances, and has always found that the best eye saw every object the largest. This he ascribes to habit; for near-sighted people being accustomed to come close to the object, and view but a small part of it at a time, the habit ensues when the whole of an object is seen, and it appears less to them than to others.

Infants having their eyes less than those of adults, must see objects also smaller in proportion. For the image formed on the back of the eye will be larger, as the eye is capacious; and infants, having it not so great, cannot have so large a picture of the object. This may be a reason also why they are unable to see so distinctly, or at such distances as persons arrived at maturity.

Old men, on the contrary, see bodies close to them very indistinctly, but bodies at a great distance from them with more precision; and this may happen from an alteration in the coats, or, perhaps, humours of the eye; and not, as is supposed, from their diminution. The cornea, for instance, may become too rigid to adapt itself, and take a proper convexity for seeing minute objects; and its very flatness will be sufficient to fit it for distant vision.

When we cast our eyes upon an object extremely brilliant, or when we fix and detain them too long upon the same object, the organ is hurt and fatigued, its vision becomes indistinct, and the image of the body, which has thus too vio-

lently, or too perseveringly employed us, is painted upon every thing we look at, and mixes with every object that occurs. "And this is an obvious consequence of the eye taking in too much light, either immediately, or by reflection. Every body exposed to the light for a time, drinks in a quantity of its rays, which, being brought into darkness, it cannot instantly discharge. Thus the hand, if it be exposed to broad day-light for some time, and then immediately snatched into a dark room, will appear still luminous; and it will be some time before it is totally darkened. It is thus with the eye; which, either by an instant gaze at the sun, or a steady continuance upon some less brilliant object, has taken in too much light; its humours are for a while unfit for vision until that be discharged, and room made for rays of a milder nature." How dangerous the looking upon bright and luminous objects is to the sight, may be easily seen from such as live in countries covered for most part of the year with snow, who become generally blind before their time. Travellers who cross these countries are obliged to wear a crape before their eyes, to save their eyes, which would otherwise be rendered totally unserviceable; and it is equally dangerous in the sandy plains of Africa. The reflection of the light is there so strong, that it is impossible to sustain the effect without incurring the danger of losing one's sight entirely. Such persons, therefore, as read or write for any continuance, should choose a moderate light, in order to save their eyes; and although it may seem insufficient at

first, the eye will accustom itself to the shade by degrees, and be less hurt by the want of light than the excess.

" It is indeed surprising how far the eye can accommodate itself to darkness, and make the best of a gloomy situation. When first taken from the light, and brought into a dark room, all things disappear; or if any thing is seen, it is only the remaining radiations that still continue in the eye. But after a very little time, when these are spent, the eye takes the advantage of the smallest ray that happens to enter; and this alone would in time serve for many of the purposes of life. There was a gentleman of great courage and understanding, who was a major under King Charles the First. This unfortunate man, sharing in his master's misfortunes, and being forced abroad, ventured at Madrid to do his King a signal service; but unluckily failed in the attempt. In consequence of this, he was instantly ordered to a dark and dismal dungeon, into which the light never entered, and into which there was no opening but by a hole at the top, down which the keeper put his provisions, and presently closed it again on the other side. In this manner the unfortunate loyalist continued for some weeks, distressed and disconsolate; but at last he began to think he saw some little glimmering of light. This internal dawn seemed to increase from time to time, so that he could not only discover the parts of his bed, and such other large objects, but at length he even began to perceive the mice that frequented his cell, and

saw them, as they ran about the floor, eating the crumbs of bread that happened to fall. After some months' confinement, he was at last set free; but such was the effect of the darkness upon him, that he could not for some days venture to leave his dungeon, but was obliged to accustom himself by degrees to the light of the day."

CHAPTER III.

OF HEARING.*

As the sense of hearing, as well as of sight, gives us notice of remote objects, so, like that, it is subject to similar errors, being capable of imposing on us upon all occasions, where we cannot rectify it by the sense of feeling. We can have from it no distinct intelligence of the distance from whence a sounding body is heard; a great noise far off, and a small one very near, produce the same sensation; and unless we receive information from some other sense, we can never distinctly tell whether the sound be a great or a small one. It is not till we have learned, by experience, that the particular sound which is heard is of a peculiar kind, that we can judge of the distance from whence we hear it. When we know the tone of the bell, we can then judge how far it is from us.

* This chapter is taken from M. Buffon, except where marked by inverted commas.

Every body that strikes against another produces a sound, which is simple, and but one, in bodies which are not elastic, but which is often repeated in such as are. If we strike a bell, or a stretched string, for instance, which are both elastic, a single blow produces a sound, which is repeated by the undulations of the sonorous body, and which is multiplied as often as it happens to undulate or vibrate. These undulations each strike their own peculiar blow; but they succeed so fast, one behind the other, that the ear supposes them one continued sound; whereas, in reality, they make many. A person who should for the first time hear the toll of the bell, would very probably be able to distinguish these breaks of sound; and, in fact, we can readily ourselves perceive an intension and remission in the sound.

In this manner, sounding bodies are of two kinds; those unelastic ones, which being struck return but a single sound; and those more elastic, returning a succession of sounds, which, uniting together, form a tone. This tone may be considered as a great number of sounds, all produced one after the other by the same body, as we find in a bell, or the string of a harpsichord, which continues to sound for some time after it is struck. A continuing tone may be also produced from a non-elastic body, by repeating the blow quick and often; as when we beat a drum, or when we draw a bow along the string of a fiddle.

Considering the subject in this light, if we should multiply the number of blows, or repeat them at quicker intervals upon the sounding body,

as upon the drum, for instance, it is evident that this will have no effect in altering the tone; it will only make it either more even or more distinct. But it is otherwise if we increase the force of the blow; if we strike the body with double weight, this will produce a tone twice as loud as the former. If, for instance, I strike a table with a switch, this will be very different from the sound produced by striking it with a cudgel. Hence, therefore, we may infer, that all bodies give a louder and graver tone, not in proportion to the number of times they are struck, but in proportion to the force that strikes them. And if this be so, those philosophers who made the tone of a sonorous body, of a bell, or the string of a harpsichord, for instance, to depend upon the number only of its vibrations, and not the force, have mistaken what is only an effect for a cause. A bell, or an elastic string, can only be considered as a drum beaten; and the frequency of the blows can make no alteration whatever in the tone. The largest bells, and the longest and thickest strings, have the most forceful vibrations; and therefore their tones are the most loud and the most grave.

To know the manner in which sounds thus produced become pleasing, it must be observed, no one continuing tone, how loud or swelling soever, can give us satisfaction; we must have a succession of them, and those in the most pleasing proportion. The nature of this proportion may be thus conceived. If we strike a body incapable of vibration with a double force, or, what amounts to the same thing, with a double mass of matter,

it will produce a sound that will be doubly grave. Music has been said by the ancients to have been first invented from the blows of different hammers on an anvil. Suppose then we strike an anvil with a hammer of one pound weight, and again with a hammer of two pounds, it is plain that the two pound hammer will produce a sound twice as grave as the former. But if we strike with a two pound hammer, and then with a three pound, it is evident that the latter will produce a sound one-third more grave than the former. If we strike the anvil with a three pound hammer, and then with a four pound, it will likewise follow that the latter will be a quarter part more grave than the former. Now, in the comparing between all those sounds, it is obvious that the difference between one and two is more easily perceived, than between two and three, three and four, or any numbers succeeding in the same proportion. The succession of sounds will be, therefore, pleasing in proportion to the ease with which they may be distinguished. That sound which is double the former, or, in other words, the octave to the preceding tone, will of all others be the most pleasing harmony. The next to that, which is as two to three, or, in other words, the third, will be most agreeable. And thus, universally, those sounds whose difference may be most easily compared, are the most agreeable.

"Musicians, therefore, have contented themselves with seven different proportions of sound, which are called *notes*, and which sufficiently answer all the purposes of pleasure. Not but

that they might adopt a greater diversity of proportions; and some have actually done so; but in these the differences of the proportion are so imperceptible, that the ear is rather fatigued than pleased in making the distinction. In order, however, to give variety, they have admitted half tones; but in all the countries where music is yet in its infancy, they have rejected such, and they can find music in none but the obvious ones. The Chinese, for instance, have neither flats nor sharps in their music; but the intervals between their other notes are in the same proportion with ours.

"Many more barbarous nations have their peculiar instruments of music; and what is remarkable, the proportion between their notes is in all the same as in ours. This is not the place for entering into the nature of these sounds, their effects upon the air, or their consonances with each other. We are not now giving a history of sound, but of human perception.

"All countries are pleased with music; and if they have not skill enough to produce harmony, at least they seem willing to substitute noise. Without all question, noise alone is sufficient to operate powerfully on the spirits; and if the mind be already predisposed to joy, I have seldom found noise fail of increasing it into rapture. The mind feels a kind of distracted pleasure in such powerful sounds, braces up every nerve, and riots in the excess. But, as in the eye, an immediate gaze upon the sun will disturb the organs, so, in the ear, a loud unexpected noise disorders

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the whole frame, and sometimes disturbs the sense ever after. The mind must have time to prepare for the expected shock, and to give its organs the proper tension for its arrival.

" Musical sounds, however, seem of a different kind. Those are generally most pleasing, which are most unexpected. It is not from bracing up the nerves, but from the grateful succession of the sounds, that these become so charming. There are few, how indifferent soever, but have at times felt their pleasing impression; and, perhaps, even those who have stood out against the powerful persuasion of sounds, only wanted the proper tune, or the proper instrument, to allure them.

" The ancients give us a thousand strange instances of the effects of music upon men and animals. The story of Arion's harp, that gathered the dolphins to the ship's side, is well known; and, what is remarkable, Schotteus assures us,* that he saw a similar instance of fishes being allured by music. They tell us of diseases that have been cured, unchastity corrected, seditions quelled, passions removed, and sometimes excited even to madness. Dr Wallis has endeavoured to account for these surprising effects, by ascribing them to the novelty of the art. For my own part, I can scarcely hesitate to impute them to the exaggeration of the writers. They are as hyperbolical in the effects of their oratory; and yet we well know there is nothing in the orations

* Quod oculis meis spectavi. Schotti Magic. universalis, pars ii. l. 1. p. 26.

which they have left us, capable of exciting madness, or of raising the mind to that ungovernable degree of fury which they describe. As they have exaggerated, therefore, in one instance, we may naturally suppose that they have done the same in the other; and, indeed, from the few remains we have of their music, collected by Meibomius, one might be apt to suppose there was nothing very powerful in what is lost. Nor does any one of the ancient instruments, such as we see them represented in statues, appear comparable to our fiddle.

"However this be, we have many odd accounts, not only among them, but the moderns, of the power of music; and it must not be denied but that, on some particular occasions, musical sounds may have a very powerful effect. I have seen all the horses and cows in a field, where there were above a hundred, gather round a person that was blowing a French horn, and seeming to testify an awkward kind of satisfaction. Dogs are well known to be very sensible of different tones in music; and I have sometimes heard them sustain a very ridiculous part in a concert, where their assistance was neither expected nor desired.

"We are told of Henry IV. of Denmark,* that being one day desirous of trying in person, whether a musician, who boasted that he could excite men to madness, was not an impostor, he submitted to the operation of his skill: but the

* Olaii Magni, l. 15. hist. c. 28.

consequence was much more terrible than he expected; for, becoming actually mad, he killed four of his attendants, in the midst of his transports. A contrary effect of music we have,* in the cure of a madman of Alais, in France, by music. This man, who was a dancing-master, after a fever of five days, grew furious, and so ungovernable, that his hands were obliged to be tied to his sides: what at first was rage, in a short time was converted into silent melancholy, which no arts could exhilarate, nor no medicines remove. In this sullen and dejected state, an old acquaintance accidentally came to inquire after his health: he found him sitting up in bed, tied, and totally regardless of every external object round him. Happening, however, to take up a fiddle that lay in the room, and touching a favourite air, the poor madman instantly seemed to brighten up at the sound; from a recumbent posture he began to sit up; and as the musician continued playing, the patient seemed desirous of dancing to the sound; but he was tied, and incapable of leaving his bed, so that he could only humour the tune with his head, and the parts of his arms which were at liberty. Thus the other continued playing, and the dancing-master practised his own art, as far as he was able, for about a quarter of an hour, when suddenly falling into a deep sleep, in which his disorder came to a crisis, he awaked perfectly recovered.

"A thousand other instances might be added, equally true: let it suffice to add one more, which

* Hist. de l'Acad. 1708, p. 22.

is not true; I mean that of the tarantula. Every person who has been in Italy, now well knows that the bite of this animal, and its being cured by music, is all a deception. When strangers come into that part of the country, the country people are ready enough to take money for dancing to the tarantula. A friend of mine had a servant who suffered himself to be bit; the wound, which was little larger than the puncture of a pin, was uneasy for a few hours, and then became well without any farther assistance. Some of the country people, however, still make a tolerable livelihood of the credulity of strangers, as the musician finds his account in it no less than the dancer."

Sounds, like light, are not only extensively diffused, but are frequently reflected. The laws of this reflection, it is true, are not as well understood as those of light; all we know is, that sound is principally reflected by hard bodies; and their being hollow, also, sometimes increases the reverberation. "No art, however, can make an echo; and some, who have bestowed great labour and expense upon such a project, have only erected shapeless buildings, whose silence was a mortifying lecture upon their presumption."

The internal cavity of the ear seems to be fitted up for the purpose of echoing sound with the greatest precision. This part is fashioned out in the temporal bone, like a cavern cut into a rock. "In this the sound is repeated and articulated; and, as some anatomists tell us, (for we have as yet but very little knowledge on this

subject), is beaten against the tympanum or drum of the ear, which moves four little bones joined thereto; and these move and agitate the internal air which lies on the other side; and lastly, this air strikes and affects the auditory nerves, which carry the sound to the brain."

One of the most common disorders in old age is deafness; which probably proceeds from the rigidity of the nerves in the labyrinth of the ear. This disorder also, sometimes, proceeds from a stoppage of the wax, which art may easily remedy. In order to know whether the defect be an internal or an external one, let the deaf person put a repeating watch into his mouth, and if he hears it strike, he may be assured that his disorder proceeds from an external cause, and is in some measure curable; "for there is a passage from the ears into the mouth, by what anatomists call the eustachian tube; and by this passage people often hear sounds, when they are utterly without hearing through the larger channel: and this also is the reason that we often see persons who listen with great attention, hearken with their mouths open, in order to catch all the sound at every aperture."

It often happens, that persons hear differently with one ear from the other; and it is generally found that these have what is called by musicians *a bad ear*. M. Buffon, who has made many trials upon persons of this kind, always found, that their defect in judging properly of sounds proceeded from the inequality of their ears; and receiving by both, at the same time, unequal sensations,

they form an unjust idea. In this manner, as those people hear false, they also, without knowing it, sing false. Those persons also frequently deceive themselves with regard to the side from whence the sound comes, generally supposing the noise to come on the part of the best ear.

Such as are hard of hearing find the same advantage in the trumpet made for this purpose that short-sighted persons do from glasses. These trumpets might be easily improved so as to increase sounds, in the same manner that the telescope does objects: however, they could be used to advantage only in a place of solitude and stillness, as the neighbouring sounds would mix with the more distant, and the whole would produce in the ear nothing but tumult and confusion.

Hearing is a much more necessary sense to man than to animals. With these, it is only a warning against danger, or an encouragement to mutual assistance. In man, it is the source of most of his pleasures; and without which the rest of his senses would be of little benefit. A man born deaf must necessarily be dumb; and his whole sphere of knowledge must be bounded only by sensual objects. We have an instance of a young man who, being born deaf, was restored, at the age of twenty-four, to perfect hearing: the account is given in the Memoirs of the Academy of Sciences, 1703, page 18.

A young man of the town of Chartres, between the age of twenty-three and twenty-four, the son of a tradesman, and deaf and dumb from his birth, began to speak all of a sudden, to the great asto-

nishment of the whole town. He gave them to understand, that about three or four months before he had heard the sound of the bells, for the first time, and was greatly surprised at this new and unknown sensation. After some time, a kind of water issued from his left ear, and he then heard perfectly well with both. During these three months he was sedulously employed in listening, without saying a word, and accustoming himself to speak softly, so as not to be heard, the words pronounced by others. He laboured hard also in perfecting himself in the pronunciation, and in the ideas attached to every sound. At length, having supposed himself qualified to break silence, he declared that he could now speak, although as yet but imperfectly. Soon after, some able divines questioned him concerning his ideas of his past state; and principally with respect to God, his soul, the morality or turpitude of actions. The youth, however, had not driven his solitary speculations into that channel. He had gone to mass indeed with his parents, had learned to sign himself with the cross, to kneel down and assume all the grimaces of a man that was praying: but he did all this without any manner of knowledge of the intention or the cause; he saw others do the like, and that was enough for him; he knew nothing even of death, and it never entered into his head; he led a life of pure animal instinct, entirely taken up with sensible objects, and such as were present; he did not seem even to make as many reflections upon these as might

reasonably be expected from his improving situation: and yet the young man was not in want of understanding; but the understanding of a man deprived of all commerce with others, is so very confined, that the mind is in some measure totally under the controul of its immediate sensations.

Notwithstanding, it is very possible to communicate ideas to deaf men which they previously wanted, and even give them very precise notions of some abstract subjects, by means of signs and of letters. A person born deaf, may, by time, and sufficient pains, be taught to write and read, to speak, and, by the motions of the lips, to understand what is said to him; however, it is probable that, as most of the motions of speech are made within the mouth by the tongue, the knowledge from the motion of the lips is but very confined: "nevertheless, I have conversed with a gentleman thus taught, and in all the commonly occurring questions, and the usual salutations, he was ready enough, merely by attending to the motion of the lips alone. When I ventured to speak for a short continuance, he was totally at a loss, although he understood the subject, when written, extremely well." Persons taught in this manner were at first considered as prodigies; but there have been so many instances of success of late, and so many are skilful in the art of instructing in this way, that though still a matter of some curiosity, it ceases to be an object of wonder.

CHAPTER IV.

OF SMELLING, FEELING, AND TASTING.

An animal may be said to fill up that sphere which he can reach by his senses; and is actually large in proportion to the sphere to which its organ extends. By sight, man's enjoyments are diffused into a wide circle; that of hearing, though less widely diffused, nevertheless extends his powers; the sense of smelling is more contracted still; and the taste and touch is the most confined of all. Thus man enjoys very distant objects but with one sense only; more nearly, he brings two senses at once to bear upon them; his sense of smelling assists the other two at its own distance; and of such objects, as a man, he may be said to be in perfect possession.

Each sense, however, the more it acts at a distance, the more capable it is of making combinations; and is, consequently, the more improveable.

Refined imaginations, and men of strong minds, take more pleasure, therefore, in improving the delights of the distant senses, than in enjoying such as are scarce capable of improvement.

By combining the objects of the extensive senses, all the arts of poetry, painting, and harmony, have been discovered; but the closer senses, if I may so call them, such as smelling, tasting, and touching, are in some measure as

simple as they are limited, and admit of little variety. The man of imagination makes a great and an artificial happiness, by the pleasure of altering and combining; the sensualist stops just where he began, and cultivates only those pleasures which he cannot improve. The sensualist is contented with those enjoyments that are already made to his hand; but the man of pleasure is the best pleased with growing happiness.

Of all the senses, perhaps, there is not one in which man is more inferior to other animals than in that of smelling. With man, it is a sense that acts in a narrow sphere, and disgusts almost as frequently as it gives him pleasure. With many other animals it is diffused to a very great extent, and never seems to offend them. Dogs not only trace the steps of other animals, but also discover them by the scent at a very great distance; and while they are thus exquisitely sensible of all smells, they seem no way disgusted by any.

But although this sense is in general so very inferior in man, it is much stronger in those nations that abstain from animal food than among Europeans. The Bramins of India have a power of smelling, as I am informed, equal to what it is in most other creatures. They can smell the water which they drink, that to us seems quite inodorous; and have a word, in their language, which denotes a country of fine water. We are told, also, that the Negroes of the Antilles, by the smell alone, can distinguish between the footsteps of a Frenchman and a Negro. It is possible, therefore, that we may dull this organ by our

luxurious way of living; and sacrifice to the pleasure of taste, those which might be received from perfume.

However, it is a sense that we can, in some measure, dispense with; and I have known many that wanted it entirely, with but very little inconvenience from its loss. In a state of nature it is said to be useful in guiding us to proper nourishment, and deterring us from that which is unwholesome; but in our present situation, such information is but little wanted, and indeed but little attended to. In fact, the sense of smelling gives us very often false intelligence. Many things that have a disagreeable odour, are, nevertheless, wholesome and pleasant to the taste; and such as make eating an art, seldom think a meal fit to please the appetite till it begins to offend the nose. On the other hand, there are many things that smell most gratefully, and yet are noxious, or fatal to the constitution. Some physicians think that perfumes, in general, are unwholesome; that they relax the nerves, produce headachs, and even retard digestion. The manchineel apple, which is known to be deadly poison, is possessed of the most grateful odour. Some of those mineral vapours that are often found fatal in the stomach, smell like the sweetest flowers, and continue thus to flatter till they destroy. This sense, therefore, as it should seem, was never meant to direct us in the choice of food, but appears rather as an attendant than a necessary pleasure.

Indeed, if we examine the natives of different countries, or even different natives of the same, we shall find no pleasure in which they differ so widely as that of smelling. Some persons are pleased with the smell of a rose; while I have known others that could not abide to have it approach them. The savage nations are highly delighted with the smell of assafœtida, which is to us the most nauseous stink in nature. It would in a manner seem that our delight in perfumes was made by habit, and that a very little industry could bring us totally to invert the perception of odours.

Thus much is certain, that many bodies which at one distance are an agreeable perfume, when nearer are a most ungrateful odour. Musk and ambergrise, in small quantities, are considered by most persons as highly fragrant; and yet, when in large masses, their scent is insufferable. From a mixture of two bodies, each whereof is, of itself, void of all smell, a very powerful smell may be drawn. Thus, by grinding quick-lime with sal-ammoniac, may be produced a very fetid mixture. On the contrary, from a mixture of two bodies, that are separately disagreeable, a very pleasant aromatic odour may be gained. A mixture of aquafortis with spirit of wine produces this effect. But not only the alterations of bodies by each other, but the smallest change in us makes a very great alteration in this sense, and frequently deprives us of it totally. A slight cold often hinders us from smelling; and as often changes the nature of odours. Some per-

sons, from disorder, retain an incurable aversion to those smells which most pleased them before; and many have been known to have an antipathy to some animals, whose presence they instantly perceived by the smell. From all this, therefore, the sense of smelling appears to be an uncertain monitor, easily disordered, and not much missed when totally wanting.

The sense most nearly allied to smelling is that of tasting. This some have been willing to consider merely as a nicer kind of touch, and have undertaken to account, in a very mechanical manner, for the difference of savours. Such bodies, said they, as are pointed, happening to be applied to the papillæ of the tongue, excite a very powerful sensation, and give us the idea of saltness. Such, on the contrary, as are of a rounder figure, slide smoothly along the papillæ, and are perceived to be sweet. In this manner they have, with minute labour, gone through the variety of imagined forms in bodies, and have given them as imaginary effects. All we can precisely determine upon the nature of tastes is, that the bodies to be tasted must be either somewhat moistened, or in some measure dissolved by the saliva, before they can produce a proper sensation: when both the tongue itself, and the body to be tasted, are extremely dry, no taste whatever ensues. The sensation is then changed; and the tongue, instead of tasting, can only be said, like any other part of the body, to feel the object.

It is for this reason that children have a stronger relish of tastes than those who are more advanced

in life. This organ with them, from the greater moisture of their bodies, is kept in greater perfection, and is consequently better adapted to perform its functions. Every person remembers how great a pleasure he found in sweets while a child; but his taste growing more obtuse with age, he is obliged to use artificial means to excite it. It is then that he is found to call in the assistance of poignant sauces, and strong relishes, of salts and aromatics; all which the delicacy of his tender organ, in childhood, was unable to endure. His taste grows callous to the natural relishes, and is artificially formed to others more unnatural; so that the highest epicure may be said to have the most depraved taste; as it is owing to the bluntness of his organs that he is obliged to have recourse to such a variety of expedients to gratify his appetite.

As smells are often rendered agreeable by habit, so also tastes may be. Tobacco and coffee, so pleasing to many, are yet at first very disagreeable to all. It is not without perseverance that we begin to have a relish for them; we force nature so long, that what was constraint in the beginning, at last becomes inclination.

The grossest, and yet the most useful of all the senses, is that of feeling. We are often seen to survive under the loss of the rest; but of this we can never be totally deprived, but with life. Although this sense is diffused over all parts of the body, yet it most frequently happens that those parts which are most exercised in touching, acquire the greatest degree of accuracy. Thus the

fingers, by long habit, become greater masters in the art than any others, even where the sensation is more delicate and fine.* It is from this habit, therefore, and their peculiar formation, and not, as is supposed, from their being furnished with a greater quantity of nerves, that the fingers are thus perfectly qualified to judge of forms. Blind men, who are obliged to use them much oftener, have this sense much finer; so that the delicacy of the touch arises rather from the habit of constantly employing the fingers, than from any fancied nervousness in their conformation.

All animals that are furnished with hands† seem to have more understanding than others. Monkeys have so many actions like those of men, that they appear to have similar ideas of the form of bodies. All other creatures, deprived of hands, can have no distinct ideas of the shape of the objects by which they are surrounded, as they want this organ, which serves to examine and measure their forms, their risings and depressions. A quadruped probably conceives as erroneous an idea of any thing near him, as a child would of a rock or a mountain that it beheld at a distance. It may be for this reason that we often see them frighted at things with which they ought to be better acquainted. Fishes, whose bodies are covered with scales, and who have no organs for feeling, must be the most stupid of all animals. Serpents, that are likewise destitute, are yet, by winding round several bodies, better capable of

* Buffon, vol. vi. p. 80. † Ibid. p. 82.

judging of their form. All these, however, can have but very imperfect ideas from feeling; and we have already seen, when deprived of this sense, how little the rest of the senses are to be relied on.

The feeling, therefore, is the guardian, the judge, and the examiner of all the rest of the senses. It establishes their information, and detects their errors. All the other senses are altered by time, and contradict their former evidence; but the touch still continues the same; and though extremely confined in its operations, yet it is never found to deceive. The universe, to a man who had only used the rest of his senses, would be but a scene of illusion; every object misrepresented, and all its properties unknown. M. Buffon has imagined a man just newly brought into existence, describing the illusion of his first sensations, and pointing out the steps by which he arrived at reality. He considers him as just created, and awaking amidst the productions of nature; and, to animate the narrative still more strongly, has made his philosophical man a speaker. The reader will no doubt recollect Adam's speech in Milton, as being similar. All that I can say to obviate the imputation of plagiarism is, that the one treats the subject more as a poet, the other more as a philosopher. The philosopher's man describes his first sensations in the following manner.*

* Buffon, vol. vi. p. 88.

I well remember that joyful anxious moment when I first became acquainted with my own existence. I was quite ignorant of what I was, how I was produced, or from whence I came. I opened my eyes: what an addition to my surprise! The light of the day, the azure vault of heaven, the verdure of the earth, the crystal of the waters, all employed me at once, and animated and filled me with inexpressible delight. I at first imagined that all those objects were within me, and made a part of myself.

Impressed with this idea, I turned my eyes to the sun; its splendour dazzled and overpowered me: I shut them once more, and, to my great concern, I supposed that during this short interval of darkness I was again returning to nothing.

Afflicted, seized with astonishment, I pondered a moment on this great change, when I heard a variety of unexpected sounds. The whistling of the wind, and the melody of the grove, formed a concert, the soft cadence of which sunk upon my soul. I listened for some time, and was persuaded that all this music was within me.

Quite occupied with this new kind of existence, I had already forgotten the light which was my first inlet into life, when I once more opened my eyes, and found myself again in possession of my former happiness. The gratification of the two senses at once, was a pleasure too great for utterance.

I turned my eyes upon a thousand various objects: I soon found that I could lose them, and restore them at will; and amused myself more

at leisure with a repetition of this new-made power.

I now began to gaze without emotion, and to hearken with tranquillity, when a light breeze, the freshness of which charmed me, wafted its perfumes to my sense of smelling, and gave me such satisfaction as even increased my self-love.

Agitated, roused by the various pleasures of my new existence, I instantly arose, and perceived myself moved along, as if by some unknown and secret power.

I had scarcely proceeded forward, when the novelty of my situation once more rendered me immovable. My surprise returned; I supposed that every object around me had been in motion: I gave to them that agitation which I produced by changing place; and the whole creation seemed once more in disorder.

I lifted my hand to my head; I touched my forehead; I felt my whole frame: I then supposed that my hand was the principal organ of my existence; all its informations were distinct and perfect, and so superior to the senses I had yet experienced, that I employed myself for some time in repeating its enjoyments: every part of my person I touched, seemed to touch my hand in turn, and gave back sensation for sensation.

I soon found that this faculty was expanded over the whole surface of my body; and I now first began to perceive the limits of my existence, which I had in the beginning supposed spread over all the objects I saw.

Upon casting my eyes upon my body, and surveying my own form, I thought it greater than all the objects that surrounded me. I gazed upon my person with pleasure; I examined the formation of my hand and all its motions: it seemed to me large or little in proportion as I approached it to my eyes; I brought it very near, and it then hid almost every other object from my sight. I began soon, however, to find that my sight gave me uncertain information, and resolved to depend upon my feeling for redress.

This precaution was of the utmost service: I renewed my motions, and walked forward with my face turned towards the heavens. I happened to strike lightly against a palm tree, and this renewed my surprise: I laid my hand on this strange body; it seemed replete with new wonders, for it did not return me sensation for sensation, as my former feelings had done. I perceived that there was something external, and which did not make a part of my own existence.

I now, therefore, resolved to touch whatever I saw, and vainly attempted to touch the sun: I stretched forth my arm, and felt only yielding air; at every effort, I fell from one surprise into another, for every object appeared equally near me; and it was not till after an infinity of trials, that I found some objects farther removed than the rest.

Amazed with the illusions and the uncertainty of my state, I sat down beneath a tree: the most beautiful fruits hung upon it, within my reach; I stretched forth my hand, and they instantly

separated from the branch. I was proud of being able to grasp a substance without me; I held them up, and their weight appeared to me like an animated power that endeavoured to draw them to the earth. I found a pleasure in conquering their resistance.

I held them near my eye; I considered their form and beauty; their fragrance still more allured me to bring them nearer; I approached them to my lips, and drank in their odours; the perfume invited my sense of tasting, and I soon tried a new sense—How new! how exquisite! Hitherto I had tasted only of pleasure; but now it was luxury. The power of tasting gave me the idea of possession.

Flattered with this new acquisition, I continued its exercise, till an agreeable languor stealing upon my mind, I felt all my limbs become heavy, and all my desires suspended. My sensations were now no longer vivid and distinct, but seemed to lose every object, and presented only feeble images confusedly marked. At that instant I sunk upon the flowery bank, and slumber seized me. All now seemed once more lost to me. It was then as if I was returning to my former nothing. How long my sleep continued, I cannot tell, as I yet had no perception of time. My awaking appeared like a second birth; and I then perceived that I had ceased for a time to exist. This produced a new sensation of fear; and from this interruption in life, I began to conclude that I was not formed to exist for ever.

In this state of doubt and perplexity, I began to harbour new suspicions, and to fear that sleep had robbed me of some of my late powers; when, turning on one side, to resolve my doubts, what was my amazement to behold another being, like myself, stretched by my side! New ideas now began to arise; new passions, as yet unperceived, with fears and pleasures, all took possession of my mind, and prompted my curiosity: love served to complete that happiness which was begun in the individual; and every sense was gratified in all its varieties.

CHAPTER V.

OF OLD AGE AND DEATH.*

Every thing in nature has its improvement and decay. The human form is no sooner arrived at its state of perfection, than it begins to decline. The alteration is at first insensible, and often several years are elapsed before we find ourselves grown old. The news of this disagreeable change, too, generally comes from without, and we learn from others that we grow old, before we are willing to believe the report.

When the body has come to its full height, and is extended into its just dimensions, it then also begins to receive an additional bulk, which rather

* This chapter is taken from M. Buffon, except where it is marked by inverted commas.

loads than assists it. This is formed from fat, which generally, at the age of thirty-five or forty, covers all the muscles, and interrupts their activity. Every action is then performed with greater labour, and the increase of size only serves as a forerunner of decay.

The bones also become every day more solid. In the embryo they are as soft almost as the muscles and the flesh; but by degrees they harden, and acquire their natural vigour; but still, however, the circulation is carried on through them; and how hard soever the bones may seem, yet the blood holds its current through them as through all other parts of the body. Of this we may be convinced by an experiment, which was first accidentally discovered by our ingenious countryman M. Belcher. Perceiving, at a friend's house, that the bones of hogs, which were fed upon madder, were red, he tried it upon various animals, by mixing this root with their usual food, and he found that it tinctured the bones in all; an evident demonstration that the juices of the body had a circulation through the bones. He fed some animals alternately upon madder and their common food for some time, and he found their bones tinctured with alternate layers, in conformity to their manner of living. From all this he naturally concluded, that the blood circulated through the bones as it does through every other part of the body; and that how solid soever they seemed, yet, like the softest parts, they were furnished through all their substance with their proper canals. Nevertheless, these canals are of very

different capacities during the different stages of life. In infancy they are capacious, and the blood flows almost as freely through the bones as through any other part of the body; in manhood their size is greatly diminished, the vessels are almost imperceptible, and the circulation through them is proportionably slow. But in the decline of life, the blood, which flows through the bones, no longer contributing to their growth, must necessarily serve to increase their hardness. The channels that every-where run through the human frame, may be compared to those pipes that we every-where see crusted on the inside, by the water for a long continuance running through them. Both every day grow less and less, by the small rigid particles which are deposited within them. Thus, as the vessels are by degrees diminished, the juices also, which were necessary for the circulation through them, are diminished in proportion; till at length, in old age, those props of the human frame are not only more solid, but more brittle.

The cartilages, or gristles, which may be considered as bones beginning to be formed, grow also more rigid. The juices circulating through them, for there is a circulation through all parts of the body, every day contributes to render them harder; so that these substances, which in youth are elastic and pliant, in age become hard and bony. As these cartilages are generally placed near the joints, the motion of the joints also must, of consequence, become more difficult.

Thus, in old age, every action of the body is performed with labour; and the cartilages, formerly so supple, will now sooner break than bend.

"As the cartilages acquire hardness, and unfit the joints for motion, so also that mucous liquor, which is always separated between the joints, and which serves, like oil to a hinge, to give them an easy and ready play, is now grown more scanty. It becomes thicker, and more clammy, more unfit for answering the purposes of motion; and from thence, in old age, every joint is not only stiff, but awkward. At every motion, this clammy liquor is heard to crack; and it is not without the greatest efforts of the muscles that its resistance is overcome. I have seen an old person, who never moved a single joint that did not thus give notice of the violence done it."

The membranes that cover the bones, the joints, and the rest of the body, become, as we grow old, more dense and more dry. Those which surround the bones, soon cease to be ductile. The fibres, of which the muscles or flesh is composed, become every day more rigid; and while to the touch the body seems, as we advance in years, to grow softer, it is, in reality, increasing in hardness. It is the skin and not the flesh, that we feel upon such occasions. The fat and flabbiness of that seems to give an appearance of softness, which the flesh itself is very far from having. There are few can doubt this after trying the difference between the flesh of young and old animals. The first is soft and tender, the last is hard and dry.

The skin is the only part of the body that age does not contribute to harden. That stretches to every degree of tension; and we have horrid instances of its pliancy, in many disorders incident to humanity. In youth, therefore, while the body is vigorous and increasing, it still gives way to its growth. But, although it thus adapts itself to our increase, it does not in the same manner conform to our decay. The skin, which in youth was filled and glossy, when the body begins to decline has not elasticity enough to shrink entirely with its diminution. It hangs, therefore, in wrinkles, which no art can remove. The wrinkles of the body, in general, proceed from this cause: But those of the face seem to proceed from another; namely, from the many varieties of positions into which it is put by the speech, the food, or the passions. Every grimace, and every passion, wrinkles up the visage into different forms. These are visible enough in young persons; but what at first was accidental, or transitory, becomes unalterably fixed in the visage as it grows older. "From hence we may conclude, that a freedom from passions not only adds to the happiness of the mind, but preserves the beauty of the face; and the person that has not felt their influence, is less strongly marked by the decays of nature."

Hence, therefore, as we advance in age, the bones, the cartilages, the membranes, the flesh, the skin, and every fibre of the body, become more solid, more brittle, and more dry. Every part shrinks, every motion becomes more slow;

the circulation of the fluids is performed with less freedom; perspiration diminishes; the secretions alter; the digestion becomes slow and laborious; and the juices no longer serving to convey their accustomed nourishment, those parts may be said to live no longer when the circulation ceases. Thus the body dies by little and little: all its functions are diminished by degrees; life is driven from one part of the frame to another; universal rigidity prevails, and death at last seizes upon the little that is left.

As the bones, the cartilages, the muscles, and all other parts of the body, are softer in women than in men, these parts must, of consequence, require a longer time to come to that hardness which hastens death. Women, therefore, ought to be a longer time in growing old than men; and this is actually the case. If we consult the tables which have been drawn up respecting human life, we shall find, that after a certain age they are more long-lived than men, all other circumstances the same. A woman of sixty has a better chance than a man of the same age to live till eighty. Upon the whole we may infer, that such persons as have been slow in coming up to maturity, will also be slow in growing old; and this holds as well with regard to other animals as to man.

The whole duration of the life of either vegetables or animals may be, in some measure, determined from their manner of coming to maturity. The tree, or the animal, which takes but a short time to increase to its utmost pitch, perishes much sooner than such as are less premature. In both,

the increase upwards is first accomplished; and not till they have acquired their greatest degree of height do they begin to spread in bulk. Man grows in stature till about the age of seventeen; but his body is not completely developed till about thirty. Dogs, on the other hand, are at their utmost size in a year, and become as bulky as they usually are in another. However, man, who is so long in growing, continues to live fourscore or a hundred years, but the dog seldom above twelve or thirteen. In general also it may be said, that large animals live longer than little ones, as they usually take a longer time to grow. But in all animals one thing is equally certain, that they carry the causes of their own decay about them, and that their deaths are necessary and inevitable. The prospects which some visionaries have formed of perpetuating life by remedies, have been often enough proved false by their own example. Such unaccountable schemes would, therefore, have died with them, had not the love of life always augmented our credulity.

When the body is naturally well formed, it is possible to lengthen out the period of life for some years by management. Temperance in diet is often found conducive to this end. The famous Cornaro, who lived to above a hundred years, although his constitution was naturally feeble, is a strong instance of the benefit of an abstemious life. Moderation in the passions also may contribute to extend the term of our existence. "Fontenelle, the celebrated writer, was naturally of a very weak and delicate habit of

body. He was affected by the smallest irregularities; and had frequently suffered severe fits of illness from the slightest causes. But the remarkable equality of his temper, and his seeming want of passion, lengthened out his life to above a hundred. It was remarkable of him, that nothing could vex or make him uneasy; every occurrence seemed equally pleasing; and no event, however unfortunate, seemed to come unexpected." However, the term of life can be prolonged but for a very little time by any art we can use. We are told of men who have lived beyond the ordinary duration of human existence; such as Parr, who lived to a hundred and forty-four; and Jenkins, to a hundred and sixty-five: yet these men used no peculiar arts to prolong life; on the contrary, it appears that these, as well as some others remarkable for their longevity, were peasants, accustomed to the greatest fatigues, who had no settled rules of diet, but who often indulged in accidental excesses. Indeed, if we consider that the European, the Negro, the Chinese, and the American, the civilized man and the savage, the rich and the poor, the inhabitant of the city and of the country, though all so different in other respects, are yet entirely similar in the period allotted them for living; if we consider that neither the difference of race, of climate, of nourishment, of convenience, or of soil, makes any difference in the term of life; if we consider that those men who live upon raw flesh, or dried fishes, upon sago, or rice, upon cassava, or upon roots, nevertheless live as long

as those who are fed upon bread and meat, we shall readily be brought to acknowledge, that the duration of life depends neither upon habit, customs, nor the quantity of food; we shall confess, that nothing can change the laws of that mechanism which regulates the number of our years, and which can chiefly be affected only by long fasting, or great excess.

If there be any difference in the different periods of man's existence, it ought principally to be ascribed to the quality of the air. It has been observed, that in elevated situations there have been found more old people than in those that were low. The mountains of Scotland, Wales, Auvergne, and Switzerland, have furnished more instances of extreme old age, than the plains of Holland, Flanders, Germany, or Poland. But, in general, the duration of life is nearly the same in most countries. Man, if not cut off by accidental diseases, is often found to live to ninety or a hundred years. Our ancestors did not live beyond that date; and, since the times of David, this term has undergone little alteration.

If we be asked, how in the beginning men lived so much longer than at present, and by what means their lives were extended to nine hundred and thirty, or even nine hundred and sixty years? it may be answered, that the productions of the earth upon which they fed, might be of a different nature at that time from what they are at present. "It may be answered, that the term was abridged by Divine command, in order to

keep the earth from being overstocked with human inhabitants; since, if every person were now to live and generate for nine hundred years, mankind would be increased to such a degree, that there would be no room for subsistence; so that the plan of Providence would be altered, which is seen not to produce life without providing a proper supply."

But to whatever extent life may be prolonged, or however some may have delayed the effects of age, death is the certain goal to which all are hastening. All the causes of decay which have been mentioned, contribute to bring on this dreadful dissolution. However, nature approaches to this awful period by slow and imperceptible degrees; life is consumed day after day, and some one of our faculties, or vital principles, is every hour dying before the rest; so that death is only the last shade in the picture: and it is probable, that man suffers a greater change in going from youth to age, than from age into the grave. When we first begin to live, our lives may scarcely be said to be our own; as the child grows, life increases in the same proportion, and is at its height in the prime of manhood. But as soon as the body begins to decrease, life decreases also; for as the human frame diminishes, and its juices circulate in smaller quantity, life diminishes and circulates with less vigour; so that as we begin to live by degrees, we begin to die in the same manner.

Why then should we fear death, if our lives have been such as not to make eternity dreadful?

Why should we fear that moment which is prepared by a thousand other moments of the same kind; the first pangs of sickness being probably greater than the last struggles of departure? Death, in most persons, is as calmly endured as the disorder that brings it on. If we inquire from those whose business it is to attend the sick and the dying, we shall find that, except in a very few acute cases, where the patient dies in agonies, the greatest number die quietly, and seemingly without pain: and even the agonies of the former rather terrify the spectators than torment the patient; for how many have we not seen, who have been accidentally relieved from this extremity, and yet had no memory of what they then endured? In fact, they had ceased to live during that time when they ceased to have sensation; and their pains were only those of which they had an idea.

The greatest number of mankind die, therefore, without sensation; and of those few that still preserve their faculties entire to the last moment, there is scarcely one of them that does not also preserve the hopes of still outliving his disorder. Nature, for the happiness of man, has rendered this sentiment stronger than his reason. A person dying of an incurable disorder, which he must know to be so by frequent examples of his case; which he perceives to be so, by the inquietude of all around him, by the tears of his friends, and the departure or the face of the physician, is nevertheless still in hopes of getting over it. His interest is so great, that he only at-

tends to his own representations; the judgment of others is considered as a hasty conclusion; and while death every moment makes new inroads upon his constitution, and destroys life in some part, hope still seems to escape the universal ruin, and is the last that submits to the blow.

Cast your eyes upon a sick man, who has a hundred times told you that he felt himself dying, that he was convinced he could not recover, and that he was ready to expire; examine what passes on his visage when, through zeal or indiscretion, any one comes to tell him that his end is at hand: You will see him change like one who is told an unexpected piece of news. He now appears not to have thoroughly believed what he had been telling you himself; he doubted much, and his fears were greater than his hopes; but he still had some feeble expectations of living, and would not have seen the approaches of death, unless he had been alarmed by the mistaken assiduity of his attendants.

Death, therefore, is not that terrible thing which we suppose it to be. It is a spectre which frights us at a distance, but which disappears when we come to approach it more closely. Our ideas of its terrors are conceived in prejudice, and dressed up by fancy; we regard it not only as the greatest misfortune, but as also an evil accompanied with the most excruciating tortures; we have even increased our apprehensions, by reasoning on the extent of our sufferings. It must be dreadful, say some, since it is sufficient to separate the soul from the body; it must be long, since our suf-

ferings are proportioned to the succession of our ideas; and these being painful, must succeed each other with extreme rapidity. In this manner has false philosophy laboured to augment the miseries of our nature, and to aggravate that period which nature has kindly covered with insensibility. Neither the mind nor the body can suffer these calamities; the mind is, at that time, mostly without ideas, and the body too much enfeebled to be capable of perceiving its pain. A very acute pain produces either death or fainting, which is a state similar to death: the body can suffer but to a certain degree; if the torture becomes excessive, it destroys itself; and the mind ceases to perceive, when the body can no longer endure.

In this manner excessive pain admits of no reflection; and wherever there are any signs of it, we may be sure that the sufferings of the patient are no greater than what we ourselves may have remembered to endure.

But in the article of death we have many instances in which the dying person has shown, that every reflection which presupposes an absence of the greatest pain, and consequently that pang which ends life, cannot even be so great as those which have preceded. Thus, when Charles XII. was shot at the siege of Frederickshall, he was seen to clap his hand on the hilt of his sword; and although the blow was great enough to terminate one of the boldest and bravest lives in the world, yet it was not painful enough to destroy reflection. He perceived himself attacked; he

reflected that he ought to defend himself, and his body obeyed the impulse of his mind, even in the last extremity. Thus it is the prejudice of persons in health, and not the body in pain, that makes us suffer from the approach of death: we have, all our lives, contracted a habit of making out excessive pleasures and pains; and nothing but repeated experience shows us, how seldom the one can be suffered, or the other enjoyed, to the utmost.

If there be any thing necessary to confirm what we have said concerning the gradual cessation of life, or the insensible approaches of our end, nothing can more effectually prove it, than the uncertainty of the signs of death. If we consult what Winslow or Bruhier have said upon this subject, we shall be convinced, that between life and death the shade is so very undistinguishable, that even all the powers of art can scarcely determine where the one ends and the other begins. The colour of the visage, the warmth of the body, the suppleness of the joints, are but uncertain signs of life still subsisting; while, on the contrary, the paleness of the complexion, the coldness of the body, the stiffness of the extremities, the cessation of all motion, and the total insensibility of the parts, are but uncertain marks of death begun. In the same manner also, with regard to the pulse, and the breathing, these motions are often so kept under, that it is impossible to perceive them. By approaching a looking-glass to the mouth of the person supposed to be dead, people often expect to find whether he breathes

or not. But this is a very uncertain experiment: the glass is frequently sullied by the vapour of the dead man's body, and often the person is still alive although the glass is no way tarnished. In the same manner, neither burning nor scarifying, neither noises in the ears, nor pungent spirits applied to the nostrils, give certain signs of the discontinuance of life; and there are many instances of persons who have endured them all, and afterwards recovered, without any external assistance, to the astonishment of the spectators. How careful, therefore, should we be, before we commit those who are dearest to us to the grave, to be well assured of their departure: Experience, justice, humanity, all persuade us not to hasten the funerals of our friends, but to keep their bodies unburied, until we have certain signs of their real decease.

CHAPTER VI.

OF THE VARIETIES IN THE HUMAN RACE.

HITHERTO we have compared man with other animals; we now come to compare men with each other. We have hitherto considered him as an individual, endowed with excellencies above the rest of the creation; we now come to consider the advantages which men have over men, and the various kinds with which our earth is inhabited.

If we compare the minute differences of mankind, there is scarcely one nation upon the earth that entirely resembles another; and there may be said to be as many different kinds of men as there are countries inhabited. One polished nation does not differ more from another, than the merest savages do from those savages that lie even contiguous to them; and it frequently happens that a river or a mountain divides two barbarous tribes, that are unlike each other in manners, customs, features, and complexion. But these differences, however perceivable, do not form such distinctions as come within a general picture of the varieties of mankind. Custom, accident, or fashion, may produce considerable alterations in neighbouring nations; their being derived from ancestors of a different climate or complexion, may contribute to make accidental distinctions, which every day grow less; and it may be said, that two neighbouring nations, how unlike soever at first, will assimilate by degrees, and by long continuance the difference between them will at last become almost imperceptible. It is not, therefore, between contiguous nations we are to look for any strong marked varieties in the human species; it is by comparing the inhabitants of opposite climates and distant countries; those who live within the polar circle with those beneath the equator; those that live on one side of the globe with those that occupy the other.

Of all animals the differences between mankind are the smallest. Of the lower races of creatures, the changes are so great as often entirely to dis-

guise the natural animal, and to distort or to disfigure its shape. But the chief differences in man are rather taken from the tincture of his skin than the variety of his figure; and in all climates he preserves his erect deportment, and the marked superiority of his form. If we look round the world, there seems to be not above six distinct varieties in the human species,* each of which is strongly marked, and speaks the kind seldom to have mixed with any other. But there is nothing in the shape, nothing in the faculties, that shows their coming from different originals; and the varieties of climate, of nourishment, and custom, are sufficient to produce every change.

The first distinct race of men is found round the polar regions. The Laplanders, the Esquimaux Indians, the Samoeid Tartars, the inhabitants of Nova Zembla, the Borandians, the Greenlanders, and the natives of Kamtschatka, may be considered as one peculiar race of people, all greatly resembling each other in their stature, their complexion, their customs, and their ignorance. These nations being under a rigorous climate, where the productions of nature are but few, and the provisions coarse and unwholesome, their bodies have shrunk to the nature of their food; and their complexions have suffered from cold almost a similar change to what heat is known to produce, their colour being a deep brown, in some places inclining to actual blackness. These, therefore, in general, are found to be a race of

* I have taken four of these varieties from Linnæus; those of the Laplanders and Tartars from M. Buffon.

short stature, and odd shape, with countenances as savage as their manners are barbarous. The visage, in these countries, is large and broad, the nose flat and short, the eyes of a yellowish-brown, inclining to blackness, the eye-lids drawn towards the temples, the cheek-bones extremely high, the mouth very large, the lips thick and turned outwards, the voice thin and squeaking, the head large, the hair black and straight, the colour of the skin of a dark greyish.* They are short in stature, the generality not being above four feet high, and the tallest not above five. Among all these nations the women are as deformed as the men, and resemble them so nearly, that one cannot at first distinguish the sexes among them.

These nations not only resemble each other in their deformity, their dwarfishness, the colour of their hair and eyes, but they have, in a great measure, the same inclinations and the same manners, being all equally rude, superstitious, and stupid. The Danish Laplanders have a large black cat, to which they communicate their secrets, and consult in all their affairs. Among the Swedish Laplanders, there is in every family a drum for consulting the devil; and although these nations are robust and nimble, yet they are so cowardly that they never can be brought into the field. Gustavus Adolphus attempted to form a regiment of Laplanders, but he found it impossible to accomplish his design; for it should seem that they can live only in their own country, and in their own

* Crantz.

manner. They make use of skates, which are made of fir, of near three feet long, and half a foot broad; these are pointed, and raised before, and tied to the foot by straps of leather. With these they skate upon the icy snow with such velocity, that they very easily overtake the swiftest animals. They make use also of a pole, pointed with iron at one end, and rounded at the other. This pole serves to push them along, to direct their course, to support them from falling, to stop the impetuosity of their motion, and to kill that game which they have overtaken. Upon these skates they descend the steepest mountains, and scale the most craggy precipices; and in these exercises the women are not less skilful than the men. They have all the use of the bow and arrow, which seems to be a contrivance common to all barbarous nations; and which, however, at first, required no small skill to invent. They launch a javelin also with great force; and some say that they can hit a mark, no larger than a crown, at thirty yards distance, and with such force as would pierce a man through. They are all hunters; and particularly pursue the ermine, the fox, the ounce, and the martin, for the sake of their skins. These they barter with their southern neighbours for brandy and tobacco, both which they are fond of to excess. Their food is principally dried fish, the flesh of rein-deer and bears. Their bread is composed of the bones of fishes, pounded and mixed with the inside tender bark of the pine tree. Their drink is train-oil and brandy, and when deprived of these, water in which juniper berries

have been infused. With regard to their morals, they have all the virtues of simplicity, and all the vices of ignorance. They offer their wives and daughters to strangers; and seem to think it a particular honour if their offer be accepted. They have no idea of religion, or a Supreme Being; the greatest number of them are idolaters; and their superstition is as profound as their worship is contemptible. Wretched and ignorant as they are, yet they do not want pride; they set themselves far above the rest of mankind; and Crantz assures us, that when the Greenlanders are got together, nothing is so customary among them as to turn the Europeans into ridicule. They are obliged, indeed, to yield them the pre-eminence in understanding and mechanic arts; but they do not know how to set any value upon these. They therefore count themselves the only civilized and well-bred people in the world; and it is common with them, when they see a quiet or a modest stranger, to say that he is almost as well-bred as a Greenlander.

From this description, therefore, this whole race of people may be considered as distinct from any other. Their long continuance in a climate the most inhospitable, their being obliged to subsist on food the most coarse and ill prepared, the savageness of their manners, and their laborious lives, all have contributed to shorten their stature, and to deform their bodies.* In proportion as we approach towards the north pole, the size of the

* Ellis's Voyage, p. 256.

natives appears to diminish, growing less and less as we advance higher, till we come to those latitudes that are destitute of all inhabitants whatsoever.

The wretched natives of these climates seem fitted by nature to endure the rigours of their situation. As their food is but scanty and precarious, their patience in hunger is amazing.* A man who has eaten nothing for four days, can manage his little canoe in the most furious waves, and calmly subsist in the midst of a tempest that would quickly dash an European boat to pieces. Their strength is not less amazing than their patience; a woman among them will carry a piece of timber, or a stone, near double the weight of what an European can lift. Their bodies are of a dark grey all over; and their faces brown, or olive. The tincture of their skins partly seems to arise from their dirty manner of living, being generally daubed with train-oil; and partly from the rigours of climate, as the sudden alterations of cold and raw air in winter, and of burning heats in summer, shade their complexions by degrees, till, in a succession of generations, they at last become almost black. As the countries in which these reside are the most barren, so the natives seem the most barbarous of any part of the earth. Their more southern neighbours of America treat them with the same scorn that a polished nation would treat a savage one; and we may readily judge of the rudeness of those manners, which

* Crantz, vol. i. p. 134.

even a native of Canada can think more barbarous than his own.

But the gradations of nature are imperceptible; and while the north is peopled with such miserable inhabitants, there are here and there to be found, upon the edges of these regions, people of larger stature and completer figure. A whole race of the dwarfish breed is often found to come down from the north, and settle more to the southward; and, on the contrary, it sometimes happens that southern nations are seen higher up, in the midst of these diminutive tribes, where they have continued for time immemorial. Thus the Ostiac Tartars seem to be a race that have travelled down from the north, and to be originally sprung from the minute savages we have been describing. There are also Norwegians and Finlanders, of proper stature, who are seen to inhabit in latitudes higher even than Lapland. These, however, are but accidental migrations, and serve as shades to unite the distinct varieties of mankind.

The second great variety in the human species, seems to be that of the Tartar race; from whence, probably, the little men we have been describing originally proceeded. The Tartar country, taken in general, comprehends the greatest part of Asia; and is, consequently, a general name given to a number of nations, of various forms and complexions. But however they seem to differ from each other, they agree in being very unlike the people of any other country. All these nations have the upper part of the visage very broad, and wrinkled even

while yet in their youth. Their noses are short and flat, their eyes little and sunk in their heads; and, in some of them, they are seen five or six inches asunder. Their cheek-bones are high, the lower part of their visage narrow, the chin long and advanced forward, their teeth of an enormous size and growing separate from each other, their eye-brows thick, large, and covering their eyes, their eye-lids thick, the face broad and flat, the complexion olive-coloured, and the hair black. They are of a middle size, extremely strong, and very robust. They have but little beard, which grows stragglingly on the chin. They have large thighs, and short legs. The ugliest of all are the Calmucks, in whose appearance there seems to be something frightful.—They all lead an erratic life, remaining under tents of hair or skins. They live upon horse-flesh and that of camels, either raw or a little sodden between the horse and the saddle. They eat also fish dried in the sun. Their most usual drink is mares' milk fermented with millet ground into meal. They all have the head shaven, except a lock of hair on the top, which they let grow sufficiently long to form into tresses, on each side of the face. The women, who are as ugly as the men, wear their hair, which they bind up with bits of copper and other ornaments of a like nature. The majority of these nations have no religion, no settled notions of morality, no decency of behaviour. They are chiefly robbers; and the natives of Dagestan, who live near their more polished neighbours, make a traffic of

Tartar slaves who have been stolen, and sell them to the Turks and the Persians. Their chief riches consist in horses, of which perhaps there are more in Tartary than in any other part of the world. The natives are taught by custom to live in the same place with their horses; they are continually employed in managing them, and at last bring them to such great obedience, that the horse seems actually to understand the rider's intention.

To this race of men, also, we must refer the Chinese and the Japanese, however different they seem in their manners and ceremonies. It is the form of the body that we are now principally considering; and there is, between these countries, a surprising resemblance. It is in general allowed, that the Chinese have broad faces, small eyes, flat noses, and scarcely any beard; that they are broad and square shouldered, and rather less in stature than Europeans. These are marks common to them and the Tartars, and they may, therefore, be considered as being derived from the same original. "I have observed," says Chardin, "that in all the people from the east and the north of the Caspian Sea, to the peninsula of Malacca, that the lines of the face, and the formation of the visage, is the same. This has induced me to believe, that all these nations are derived from the same original, however different either their complexions or their manners may appear: for as to the complexion, that proceeds entirely from the climate and the food; and as to the manners, these are generally

the result of their different degrees of wealth or power." That they come from one stock is evident also from this, that the Tartars who settle in China quickly resemble the Chinese; and, on the contrary, the Chinese who settle in Tartary soon assume the figure and the manners of the Tartars.

The Japanese so much resemble the Chinese, that one cannot hesitate to rank them in the same class. They only differ in being rather browner, as they inhabit a more southern climate. They are, in general, described as of a brown complexion, a short stature, a broad flat face, a very little beard, and black hair. Their customs and ceremonies are nearly the same; their ideas of beauty similar; and their artificial deformities of blackening the teeth, and bandaging the feet, entirely alike in both countries. They both, therefore, proceed from the same stock; and although they differ very much from their brutal progenitors, yet they owe their civilization wholly to the mildness of the climate in which they reside, and to the peculiar fertility of the soil. To this tribe, also, we may refer the Cochin-Chinese, the Siamese, the Tonquinese, and the inhabitants of Aracan, Laos, and Pegu, who, though all differing from the Chinese, and each other, nevertheless have too strong a resemblance not to betray their common original.

Another, which makes the third variety in the human species, is that of the southern Asiatics; the form of whose features and persons may be easily distinguished from those of the Tartar

races. The nations that inhabit the peninsula of India seem to be the principal stock from whence the inhabitants of the islands that lie scattered in the Indian Ocean have been peopled. They are, in general, of a slender shape, with long straight black hair, and often with Roman noses. Thus they resemble the Europeans in stature and features; but greatly differ in colour and habit of body. The Indians are of an olive colour, and, in the more southern parts, quite black; although the word Mogul, in their language, signifies a white man. The women are extremely delicate, and bathe very often; they are of an olive colour, as well as the men; their legs and thighs are long, and their bodies short, which is the opposite to what is seen among the women of Europe. They are, as I am assured, by no means so fruitful as the European women; but they feel the pains of child-birth with much less sensibility, and are generally up and well the day following. In fact, these pains seem greatest in all countries where the women are most delicate, or the constitution enfeebled by luxury or indolence. The women of savage nations seem, in a great measure, exempt from painful labours; and even the hard-working wives of the peasants among ourselves have this advantage from a life of industry, that their child-bearing is less painful.—Over all India, the children arrive sooner at maturity, than with us of Europe. They often marry, and consummate, the husband at ten years old, and the wife at eight; and they frequently have children at that age. However,

the women who are mothers so soon, cease bearing before they are arrived at thirty, and at that time they appear wrinkled, and seem marked with all the deformities of age. The Indians have long been remarkable for their cowardice and effeminacy; every conqueror that has attempted the invasion of their country, having succeeded. The warmth of the climate entirely influences their manners; they are slothful, submissive, and luxurious: satisfied with sensual happiness alone, they find no pleasure in thinking; and contented with slavery, they are ready to obey any master. Many tribes among them eat nothing that has life; they are fearful of killing the meanest insect; and have even erected hospitals for the maintenance of all kinds of vermin. The Asiatic dress is a loose flowing garment, rather fitted for the purposes of peace and indolence, than of industry or war. The vigour of the Asiatics is in general conformable to their dress and nourishment: Fed upon rice, and clothed in effeminate silk vestments, their soldiers are unable to oppose the onset of an European army; and from the times of Alexander to the present day, we have scarcely any instances of their success in arms. Upon the whole, therefore, they may be considered as a feeble race of sensualists, too dull to find rapture in any pleasures, and too indolent to turn their gravity into wisdom. To this class we may refer the Persians and Arabians, and, in general, the inhabitants of the islands that lie scattered in the Indian Ocean.

The fourth striking variety in the human species, is to be found among the Negroes of Africa. This gloomy race of mankind is found to blacken all the southern parts of Africa, from eighteen degrees north of the Line, to its extreme termination at the Cape of Good Hope. I know it is said, that the Caffres, who inhabit the southern extremity of that large continent, are not to be ranked among the Negro race; however, the difference between them, in point of colour and features, is so small, that they may very easily be grouped in this general picture; and in the one or two that I have seen, I could not perceive the smallest difference. Each of the Negro nations, it must be owned, differ from each other; they have their peculiar countries for beauty, like us; and different nations, as in Europe, pride themselves upon the regularity of their features. Those of Guinea, for instance, are extremely ugly, and have an insupportable scent; those of Mosambique are reckoned beautiful, and have no ill smell whatsoever. The Negroes in general are of a black colour, with a smooth, soft skin. This smoothness proceeds from the downy softness of the hair which grows upon it; the strength of which gives a roughness to the feel in those of a white complexion. Their skins, therefore, have a velvet smoothness, and seem less braced upon the muscles than ours. The hair of their heads differs entirely from what we are accustomed to, being soft, woolly, and short. The beard also partakes of the same qualities; but in this it differs, that it soon turns grey, which the hair is

seldom found to do; so that several are seen with white beards and black hair at the same time. Their eyes are generally of a deep hazel; their noses flat and short; their lips thick and tumid; and their teeth of an ivory whiteness. This their only beauty, however, is set off by the colour of their skin, the contrast between the black and white being the more observable. It is false to say that their features are deformed by art; since, in the Negro children born in European countries, the same deformities are seen to prevail; the same flatness in the nose, and the same prominence in the lips. They are, in general, said to be well shaped; but of such as I have seen, I never found one that might be justly called so; their legs being mostly ill formed, and commonly bending outward on the shin-bone. But it is not only in those parts of their bodies that are obvious that they are disproportioned; those parts which among us are usually concealed by dress, with them are large and languid.* The women's breasts, after bearing one child, hang down below the navel; and it is customary with them to suckle the child at their backs, by throwing the breast over the shoulder. As their persons are thus naturally deformed, at least to our imaginations, their minds are equally incapable of strong exertions. The climate

* Linnæus, in prima linea sua, fœminas Africanas depingit sicut aliquid deforme in parte genitali gestantes, quod signum pudoris nuncupat. Attamen nihil differunt a nostratibus in hac parte nisi quod labia pudendæ sint aliquantulum tumidiora. In hominibus etiam penis est longior et multo laxior.

seems to relax their mental powers still more than those of the body; they are, therefore, in general, found to be stupid, indolent, and mischievous. The Arabians themselves, many colonies of whom have migrated southward into the most inland parts of Africa, seem to have degenerated from their ancestors; and, forgetting their ancient learning, and losing their beauty, they have become a race scarcely any way distinguishable from the original natives. Nor does it seem to have fared otherwise with the Portuguese, who, about two centuries ago, settled along this coast. They also are become almost as black as the Negroes; and are said, by some, to be even more barbarous.

The inhabitants of America make a fifth race, as different from all the rest in colour as they are distinct in habitation. The natives of America, (except in the northern extremity, where they resemble the Laplanders), are of a red or copper colour; and although, in the old world, different climates produce a variety of complexions and customs, the natives of the new continent seem to resemble each other in almost every respect. They are all nearly of one colour; all have black thick straight hair, and thin black beards; which, however, they take care to pluck out by the roots. They have, in general, flat noses, with high cheek-bones, and small eyes; and these deformities of nature they endeavour to increase by art; they flatten the nose, and often the whole head of their children, while the bones are yet susceptible of every impression. They

paint the body and face of various colours, and consider the hair upon any part of it, except the head, as a deformity which they are careful to eradicate. Their limbs are generally slighter made than those of the Europeans; and I am assured they are far from being so strong. All these savages seem to be cowardly; they seldom are known to face their enemies in the field, but fall upon them at an advantage; and the greatness of their fears serves to increase the rigours of their cruelty. The wants which they often sustain, make them surprisingly patient in adversity; distress, by being grown familiar, becomes less terrible; so that their patience is less the result of fortitude than of custom. They have all a serious air, although they seldom think; and, however cruel to their enemies, are kind and just to each other. In short, the customs of savage nations in every country are almost the same: a wild, independent, and precarious life, produces a peculiar train of virtues and vices; and patience and hospitality, indolence and rapacity, content and sincerity, are found not less among the natives of America, than all the barbarous nations of the globe.

The sixth and last variety of the human species, is that of the Europeans, and the nations bordering on them. In this class we may reckon the Georgians, Circassians, and Mingrelians, the inhabitants of Asia Minor, and the northern parts of Africa, together with a part of those countries which lie north-west of the Caspian Sea. The inhabitants of these countries differ a

good deal from each other; but they generally agree in the colour of their bodies, the beauty of their complexions, the largeness of their limbs, and the vigour of their understandings. Those arts which might have had their invention among the other races of mankind, have come to perfection there. In barbarous countries, the inhabitants go either naked, or are awkwardly clothed in furs or feathers; in countries semi-barbarous, the robes are loose and flowing; but here the clothing is less made for show than expedition, and unites, as much as possible, the extremes of ornament and dispatch.

To one or other of these classes we may refer the people of every country; and as each nation has been less visited by strangers, or has had less commerce with the rest of mankind, we find their persons and their manners more strongly impressed with one or other of the characters mentioned above. On the contrary, in those places where trade has long flourished, or where enemies have made many incursions, the races are usually found blended, and properly fall beneath no one character. Thus, in the islands of the Indian Ocean, where a trade has been carried on for time immemorial, the inhabitants appear to be a mixture of all the nations upon the earth; white, olive, brown, and black men, are all seen living together in the same city, and propagate a mixed breed, that can be referred to none of the classes into which naturalists have thought proper to divide mankind.

Of all the colours by which mankind is diversified, it is easy to perceive, that ours is not only

the most beautiful to the eye, but the most advantageous. The fair complexion seems, if I may so express it, as a transparent covering to the soul; all the variations of the passions, every expression of joy or sorrow, flows to the cheek, and, without language, marks the mind. In the slightest change of health, also, the colour of the European face is the most exact index, and often teaches us to prevent those disorders that we do not as yet perceive: not but that the African black, and the Asiatic olive complexions, admit of their alterations also; but these are neither so distinct, nor so visible, as with us; and, in some countries, the colour of the visage is never found to change, but the face continues in the same settled shade, in shame and in sickness, in anger and despair.

The colour, therefore, most natural to man, ought to be that which is most becoming; and it is found, that, in all regions, the children are born fair, or at least red, and that they grow more black or tawny as they advance in age. It should seem, consequently, that man is naturally white; since the same causes that darken the complexion in infants, may have originally operated, in slower degrees, in blackening whole nations. We could, therefore, readily account for the blackness of different nations, did we not see the Americans, who live under the Line, as well as the natives of Negroland, of a red colour, and but a very small shade darker than the natives of the northern latitudes in the same continent. For this reason, some have sought for other causes of

blackness than the climate; and have endeavoured to prove, that the blacks are a race of people bred from one man, who was marked with accidental blackness. This, however, is but mere ungrounded conjecture; and although the Americans are not so dark as the Negroes, yet we must still continue in the ancient opinion, that the deepness of the colour proceeds from the excessive heat of the climate: for if we compare the heats of Africa with those of America, we shall find they bear no proportion to each other. In America, all that part of the continent which lies under the Line is cool and pleasant, either shaded by mountains, or refreshed by breezes from the sea; but in Africa, the wide tract of country that lies under the Line is very extensive, and the soil sandy: the reflection of the sun, therefore, from so large a surface of earth, is almost intolerable; and it is not to be wondered at that the inhabitants should bear, in their looks, the marks of the inhospitable climate. In America, the country is but thinly inhabited, and the more torrid tracts are generally left desert by the inhabitants; for which reasons they are not so deeply tinged by the beams of the sun. But in Africa the whole face of the country is fully peopled; and the natives are obliged to endure their situation, without a power of migration. It is there, consequently, that they are in a manner tied down to feel all the severity of the heat; and their complexions take the darkest hue they are capable of receiving. We need not therefore have recourse to any imaginary propagation from persons acci-

dentally black, since the climate is a cause obvious and sufficient to produce the effect.

In fact, if we examine the complexions of different countries, we shall find them darken in proportion to the heat of their climate, and the shades gradually to deepen as they approach the Line. Some nations, indeed, may be found not so much tinged by the sun as others, although they lie nearer the Line: But this ever proceeds from some accidental causes; either from the country lying higher, and consequently being colder, or from the natives bathing oftener, and leading a more civilized life. In general it may be asserted, that, as we approach the Line, we find the inhabitants of each country grow browner, until the colour deepens into perfect blackness. Thus, taking our standard from the whitest race of people, and beginning with our own country, which, I believe, bids fairest for the pre-eminence, we shall find the French, who are more southern, a slight shade deeper than we; going farther down, the Spaniards are browner than the French; the inhabitants of Fez darker than they; and the natives of Negroland the darkest of all. In what manner the sun produces this effect, and how the same luminary which whitens wax and linen, should darken the human complexion, is not easy to conceive. Sir Thomas Brown first supposed that a mucous substance, which had something of a vitriolic quality, settled under the reticular membrane, and grew darker with heat. Others have supposed that the blackness lay in the epidermis, or scarf skin, which was burnt up like leather.

But nothing has been satisfactorily discovered upon the subject: it is sufficient that we are assured of the fact; and that we have no doubt of the sun's tingeing the complexion in proportion to its vicinity.

But we are not to suppose that the sun is the only cause of darkening the skin; the wind, extreme cold, hard labour, or coarse and sparing nourishment, are all found to contribute to this effect. We find the peasants of every country, who are most exposed to the weather, a shade darker than the higher ranks of people. The savage inhabitants of all places are exposed still more, and therefore contract a still deeper hue; and this will account for the tawny colour of the North American Indians. Although they live in a climate the same, or even more northerly than ours, yet they are found to be of complexions very different from those of Europe. But it must be considered that they live continually exposed to the sun; that they use many methods to darken their skins by art, painting them with red ochre, and anointing them with the fat of bears. Had they taken, for a succession of several generations, the same precautions to brighten their colour that an European does, it is very probable that they would in time come to have similar complexions, and perhaps dispute the prize of beauty.

The extremity of cold is not less productive of a tawny complexion than that of heat. The natives of the arctic circle, as was observed, are all brown, and those that lie most to the north are almost entirely black. In this manner, both ex-

tremes are unfavourable to the human form and colour, and the same effects are produced under the Poles that are found at the Line.

With regard to the stature of the people of different countries, that seems chiefly to result from the nature of the food, and the quantity of the supply. Not but that the severity of heat or cold may, in some measure, diminish the growth, and produce a dwarfishness of make; but, in general, the food is the great agent in producing this effect: where that is supplied in large quantities, and where its quality is wholesome and nutrimental, the inhabitants are generally seen above the ordinary stature. On the contrary, where it is afforded in a sparing quantity, or very coarse, and void of nourishment in its kind, the inhabitants degenerate, and sink below the ordinary size of mankind. In this respect they resemble other animals, whose bodies, by proper feeding, may be greatly augmented. An ox, on the fertile plains of India, grows to a size four times as large as the diminutive animal of the same kind bred in the Alps. The horses bred in the plains are larger than those of the mountain. So it is with man: the inhabitants of the valley are usually found taller than those of the hill; the natives of the Highlands of Scotland, for instance, are short, broad, and hardy; those of the Lowlands are tall and shapely. The inhabitants of Greenland, who live upon dried fish and seals, are less than those of Gambia or Senegal, where nature supplies them with vegetable and animal abundance.

The form of the face seems rather to be the result of custom. Nations who have long considered some artificial deformity as beautiful, who have industriously lessened the feet, or flattened the nose, by degrees begin to receive the impression they are taught to assume; and nature, in a course of ages, shapes itself to the constraint, and assumes hereditary deformity. We find nothing more common in births than for children to inherit sometimes even the accidental deformities of their parents. We have many instances of squinting in the father, which he received from fright, or habit, communicated to the offspring; and I myself have seen a child distinctly marked with a scar, similar to one the father had received in battle. In this manner accidental deformities may become natural ones; and by assiduity may be continued, and even increased, through successive generations. From this, therefore, may have arisen the small eyes and long ears of the Tartar and Chinese nations. From hence originally may have come the flat noses of the blacks, and the flat heads of the American Indians.

In this slight survey, therefore, I think we may see that all the variations in the human figure, as far as they differ from our own, are produced either by the rigour of the climate, the bad quality or the scantiness of the provisions, or by the savage customs of the country. They are actual marks of the degeneracy in the human form; and we may consider the European figure and colour as standards to which to refer all other varieties, and with which to compare them. In

proportion as the Tartar or American approaches nearer to European beauty, we consider the race as less degenerated; in proportion as he differs more widely, he has made greater deviations from his original form.

That we have all sprung from one common parent, we are taught, both by reason and religion, to believe; and we have good reason also to think, that the Europeans resemble him more than any of the rest of his children. However, it must not be concealed that the olive-coloured Asiatic, and even the jet-black Negro, claim this honour of hereditary resemblance, and assert that white men are mere deviations from original perfection. Odd as this opinion may seem, they have Linnæus, the celebrated naturalist, on their side; who supposes man a native of the tropical climates, and only a sojourner more to the north. But, not to enter into a controversy upon a matter of very remote speculation, I think one argument alone will suffice to prove the contrary, and shew that the white man is the original source from whence the other varieties have sprung. We have frequently seen white children produced from black parents, but have never seen a black offspring the production of two whites. From hence we may conclude, that whiteness is the colour to which mankind naturally tends; for as, in the tulip, the parent stock is known by all the artificial varieties breaking into it; so, in man, that colour must be original which never alters, and to which all the rest are accidentally seen to change. I have seen in London, at different times,

two white Negroes, the issue of black parents, that served to convince me of the truth of this theory. I had before been taught to believe that the whiteness of the Negro skin was a disease, a kind of milky whiteness, that might be called rather a leprous crust than a natural complexion. I was taught to suppose, that the numberless white Negroes found in various parts of Africa, the white men that go by the name of *Chacrelas* in the East Indies, and the white Americans, near the Isthmus of Darien, in the West Indies, were all so many diseased persons, and even more deformed than the blackest of the natives. But, upon examining that Negro which was last shown in London, I found the colour to be exactly like that of an European; the visage white and ruddy, and the lips of the proper redness. However, there were sufficient marks to convince me of its descent. The hair was white and woolly, and very unlike any thing I had seen before. The iris of the eye was yellow, inclining to red; the nose was flat, exactly resembling that of a Negro; and the lips thick and prominent. No doubt, therefore, remained of the child's having been born of Negro parents; and the person who showed it had attestations to convince the most incredulous. From this then we see that the variation of the Negro colour is into whiteness, whereas the white are never found to have a race of Negro children. Upon the whole, therefore, all those changes which the African, the Asiatic, or the American undergoes, are but accidental deformities, which a kinder climate, better nourishment,

or more civilized manners, would, in a course of centuries, very probably remove.

CHAPTER VII.

OF MONSTERS.

HITHERTO I have only spoken of those varieties in the human species that are common to whole nations; but there are varieties of another kind, which are only found in the individual, and, being more rarely seen, are therefore called *monstrous*. If we examine into the varieties of distorted nature, there is scarcely a limb of the body, or a feature in the face, that has not suffered some reprobation, either from art or nature; being enlarged or diminished, lengthened or wrested from its due proportion. Linnæus, after having given a catalogue of monsters, particularly adds, the flat heads of Canada, the long heads of the Chinese, and the slender waists of the women of Europe, who, by strait lacing, take such pains to destroy their health, through a mistaken desire to improve their beauty.* It belongs more to the physician than the naturalist to attend to these minute deformities; and, indeed, it is a melancholy contemplation to speculate upon a catalogue of calamities, inflicted by unpitying nature, or brought

* Linnæi Syst. vol. i. p. 29. Monorchides ut minus fertiles.

upon us by our own caprice. Some, however, are fond of such accounts; and there have been books filled with nothing else. To these, therefore, I refer the reader; who may be better pleased with accounts of men with two heads, or without any head, of children joined in the middle, of bones turned into flesh, or flesh converted into bones, than I am.* It is sufficient here to observe, that every day's experience must have shown us miserable instances of this kind, produced by nature or affection; calamities that no pity can soften, or assiduity relieve.

Passing over, therefore, every other account, I shall only mention the famous instance quoted by Father Malbranche, upon which he founds his beautiful theory of monstrous productions. A woman of Paris, the wife of a tradesman, went to see a criminal broke alive upon the wheel, at the place of public execution. She was at that time two months advanced in her pregnancy, and no way subject to any disorders to affect the child in her womb. She was, however, of a tender habit of body; and, though led by curiosity to this hor-

* *Vide* Phil. Trans. passim. Miscellan. Curioss. Johan. Baptist. Wenck. Dissertatio Physica an ex virilis humani seminis cum brutali per nefarium coitum commixtione, aut vicissim ex bruti maris cum muliebri humano seminis commixtione possit verus homo generari. Vide etiam, Johnstoni Thaumatographia Naturalis. Vide Adalberti Disquisitio Physica ostenti duorum puerorum unus quorum dente aureo, alter eum capite giganteo Biluæ spectabantur. A man without lungs and stomach; Journal des Sçavans, 1672, p. 301. Another without any brain; Andreas Caroli Memorabilia, p. 167. an. 1676. Another without any head; Giornale di Roma, anno 1675, p. 26. Another without any arms; New Memoirs of Literature, vol. iv. p. 446. In short, the variety of these accounts is almost infinite; and, perhaps, their use is as much circumscribed as their variety is extensive.

rid spectacle, very easily moved to pity and compassion. She felt, therefore, all those strong emotions which so terrible a sight must naturally inspire; shuddered at every blow the criminal received, and almost swooned at his cries. Upon returning from this scene of blood, she continued for some days pensive, and her imagination still wrought upon the spectacle she had lately seen. After some time, however, she seemed perfectly recovered from her fright, and had almost forgotten her former uneasiness. When the time of her delivery approached, she seemed no ways mindful of her former terrors, nor were her pains in labour more than usual in such circumstances. But what was the amazement of her friends and assistants, when the child came into the world! It was found that every limb in its body was broken like those of the malefactor, and just in the same place. This poor infant, that had suffered the pains of life even before its coming into the world, did not die, but lived in an hospital, in Paris, for twenty years after, a wretched instance of the supposed powers of imagination in the mother, of altering and distorting the infant in the womb. The manner in which Malbranche reasons upon this fact, is as follows: The Creator has established such a sympathy between the several parts of nature, that we are led not only to imitate each other, but also to partake in the same affections and desires. The animal spirits are thus carried to the respective parts of the body, to perform the same actions which we see others perform, to receive in some measure their wounds,

and take part in their sufferings. Experience tells us, that if we look attentively on any person severely beaten, or sorely wounded, the spirits immediately flow into those parts of the body which correspond to those we see in pain. The more delicate the constitution, the more it is thus affected; the spirits making a stronger impression on the fibres of a weakly habit than of a robust one. Strong vigorous men see an execution without much concern, while women of nicer texture are struck with horror and concern. This sensibility in them must, of consequence, be communicated to all parts of their body; and, as the fibres of the child in the womb are incomparably finer than those of the mother, the course of the animal spirits must consequently produce greater alterations. Hence, every stroke given to the criminal forcibly struck the imagination of the woman; and by a kind of counter stroke, the delicate tender frame of the child.

Such is the reasoning of an ingenious man upon a fact, the veracity of which many since have called in question.* They have allowed, indeed, that such a child might have been produced, but have denied the cause of its deformity. How could the imagination of the mother, say they, produce such dreadful effects upon her child? She has no communication with the infant; she scarcely touches it in any part; quite unaffected with her concerns, it sleeps in security, in a manner secluded, by a fluid in which it swims, from

* Buffon, vol. iv. p. 9.

her that bears it. With what a variety of deformities, say they, would all mankind be marked, if all the vain and capricious desires of the mother were thus readily written upon the body of the child? Yet notwithstanding this plausible way of reasoning, I cannot avoid giving some credit to the variety of instances I have either read or seen upon this subject. If it be a prejudice, it is as old as the days of Aristotle, and to this day as strongly believed by the generality of mankind as ever. It does not admit of a reason; and indeed I can give none even why the child should in any respect resemble the father or the mother. The fact we generally find to be so. But why it should take the particular print of the father's features in the womb, is as hard to conceive, as why it should be affected by the mother's imagination. We all know what a strong effect the imagination has on those parts in particular, without being able to assign a cause how this effect is produced; and why the imagination may not produce the same effect in marking the child that it does in forming it, I see no reason. Those persons whose employment it is to rear up pigeons of different colours, can breed them, as their expression is, to a feather. In fact, by properly pairing them, they can give what colour they will to any feather, in any part of the body. Were we to reason upon this fact, what could we say? Might it not be asserted, that the egg being distinct from the body of the female, cannot be influenced by it? Might it not be plausibly said, that there is no similitude between any part of the egg and any particular

feather, which we expect to propagate? and yet, for all this, the fact is known to be true, and what no speculation can invalidate. In the same manner, a thousand various instances assure us, that the child in the womb is sometimes marked by the strong affections of the mother: how this is performed, we know not; we only see the effect, without any connexion between it and the cause. The best physicians have allowed it, and have been satisfied to submit to the experience of a number of ages; but many disbelieve it, because they expect a reason for every effect. This, however, is very hard to be given, while it is very easy to appear wise by pretending incredulity.

Among the number of monsters, dwarfs and giants are usually reckoned; though not, perhaps, with the strictest propriety, since they are no way different from the rest of mankind, except in stature. It is a dispute, however, about words, and therefore scarcely worth contending about. But there is a dispute of a more curious nature on this subject; namely, whether there are races of people thus very diminutive, or vastly large; or whether they be merely accidental varieties, that now and then are seen in the country, in a few persons, whose bodies some external cause has contributed to lessen or enlarge.

With regard to men of diminutive stature, all antiquity has been unanimous in asserting their national existence. Homer was the first who has given us an account of the pigmy nation contending with the cranes; and what poetical license might be supposed to exaggerate, Athenæus has

attempted seriously to confirm by historical assertion.* If we attend to these, we must believe, that in the internal parts of Africa there are whole nations of pigmy beings, not more than a foot in stature, who continually wage an unequal war with the birds and beasts that inhabit the plains in which they reside. Some of the ancients, however, and Strabo in particular, have supposed all these accounts to be fabulous; and have been more inclined to think this supposed nation of pigmies nothing more than a species of apes, well known to be numerous in that part of the world. With this opinion the moderns have all concurred; and that diminutive race which was described as human, has been long degraded into a class of animals that resemble us but very imperfectly.

The existence, therefore, of a pigmy race of mankind being founded in error, or in fable, we can expect to find men of diminutive stature only by accident among men of the ordinary size. Of these accidental dwarfs, every country, and almost every village, can produce numerous instances. There was a time when these unfavoured children of nature were the peculiar favourites of the great, and no prince or nobleman thought himself completely attended unless he had a dwarf among the number of his domestics. These poor little men were kept to be laughed at, or to raise the barbarous pleasure of their masters by their contrasted inferiority. Even in England, as late as the times of King James the First, the court was

* Athenæus, ix. 390.

at one time furnished with a dwarf, a giant, and a jester: these the King often took a pleasure in opposing to each other, and often fomented quarrels among them, in order to be a concealed spectator of their animosity. It was a particular entertainment of the courtiers at that time, to see little Jeffery, for so the dwarf was called, ride round the lists, expecting his antagonist, and discovering in his actions all the marks of contemptible resolution.

It was in the same spirit that Peter of Russia, in the year 1710, celebrated a marriage of dwarfs. This monarch, though raised by his native genius far above a barbarian, was nevertheless still many degrees removed from actual refinement. His pleasures, therefore, were of the vulgar kind; and this was among the number. Upon a certain day, which he had ordered to be proclaimed several months before, he invited the whole body of his courtiers, and all the foreign ambassadors, to be present at the marriage of a pigmy man and woman. The preparations for this wedding were not only very grand, but executed in a style of barbarous ridicule. He ordered that all the dwarf men and women within two hundred miles should repair to the capital, and also insisted that they should be present at the ceremony. For this purpose he supplied them with proper vehicles; but so contrived it, that one horse was seen carrying in a dozen of them into the city at once, while the mob followed shouting and laughing from behind. Some of them were at first unwilling to obey an order which they knew was calculated to turn

them into ridicule, and did not come; but he soon obliged them to obey, and, as a punishment, enjoined that they should wait upon the rest at dinner. The whole company of dwarfs amounted to seventy, besides the bride and bridegroom, who were richly adorned, and in the extremity of the fashion. For this little company in miniature, every thing was suitably provided; a low table, small plates, little glasses, and, in short, every thing was so fitted as if all things had been dwindled to their own standard. It was his great pleasure to see their gravity and their pride; the contention of the women for places, and the men for superiority. This point he attempted to adjust, by ordering that the most diminutive should take the lead; but this bred disputes, for none would then consent to sit foremost. All this, however, being at last settled, dancing followed the dinner, and the ball was opened with a minuet by the bridegroom, who measured exactly three feet two inches high. In the end matters were so contrived, that this little company, who met together in gloomy pride, and unwilling to be pleased, being at last familiarized to laughter, joined in the diversion, and became, as the journalist has it,* extremely sprightly and entertaining.

But whatever may be the entertainment such guests might afford, when united, I never found a dwarf capable of affording any when alone. I have sometimes conversed with some of those that

* Die dench wurdidge. Iwerg. Hockweit, &c. Lipsiæ, 1713, vol. viii. page 102. *seq.*

were exhibited at our fairs about town, and have ever found their intellects as contracted as their persons. They in general seemed to me to have faculties very much resembling those of children, and their desires likewise of the same kind; being diverted with the same sports, and best pleased with such companions. Of all those I have seen, which may amount to five or six, the little man, whose name was Coan, that died lately at Chelsea, was the most intelligent and sprightly. I have heard him and the giant, who sung at the theatres, sustain a very ridiculous duet, to which they were taught to give great spirit. But this mirth, and seeming sagacity, were but assumed. He had, by long habit, been taught to look cheerful upon the approach of company; and his conversation was but the mere etiquette of a person that had been used to receive visitors. When driven out of his walk, nothing could be more stupid or ignorant, nothing more dejected or forlorn. But we have a complete history of a dwarf, very accurately related by M. Daubenton, in his part of the Histoire Naturelle; which I will here take leave to translate.

This dwarf, whose name was Baby, was well known, having spent the greatest part of his life at Lunenville, in the palace of Stanislaus, the titular king of Poland. He was born in the village of Plaisne, in France, in the year 1741. His father and mother were peasants, both of good constitutions, and inured to a life of husbandry and labour. Baby, when born, weighed but a pound and a quarter. We are not informed of

the dimensions of his body at that time; but we may conjecture they were very small, as he was presented on a plate to be baptized, and for a long time lay in a slipper. His mouth, although proportioned to the rest of his body, was not at that time large enough to take in the nipple; and he was therefore obliged to be suckled by a she-goat that was in the house, and that served as a nurse, attending to his cries with a kind of maternal fondness. He began to articulate some words when eighteen months old; and at two years he was able to walk alone. He was then fitted with shoes, that were about an inch and a half long. He was attacked with several acute disorders; but the small-pox was the only one which left any marks behind it. Until he was six years old, he eat no other food but pulse, potatoes, and bacon. His father and mother were, from their poverty, incapable of affording him any better nourishment; and his education was little better than his food, being bred up among the rustics of the place. At six years old he was about fifteen inches high; and his whole body weighed but thirteen pounds. Notwithstanding this, he was well proportioned and handsome; his health was good, but his understanding scarcely passed the bounds of instinct. It was at that time that the king of Poland, having heard of such a curiosity, had him conveyed to Lunenville, gave him the name of *Baby*, and kept him in his palace.

Baby having thus quitted the hard condition of a peasant, to enjoy all the comforts and the conveniencies of life, seemed to receive no altera-

tion from his new way of living, either in mind or in person: he preserved the goodness of his constitution till about the age of sixteen, but his body seemed to increase very slowly during the whole time; and his stupidity was such, that all instructions were lost in improving his understanding. He could never be brought to have any sense of religion, nor even to show the least signs of a reasoning faculty. They attempted to teach him dancing and music, but in vain; he never could make any thing of music, and as for dancing, although he beat time tolerably exact, yet he could never remember the figure but while his dancing-master stood by to direct his motions. Notwithstanding, a mind thus destitute of understanding was not without its passions; anger and jealousy harassed it at times, nor was he without desires of another nature.

At the age of sixteen Baby was twenty-nine inches tall; at this he rested; but having thus arrived at his acme, the alterations of puberty, or rather, perhaps, of old age, came fast upon him. From being very beautiful, the poor little creature now became quite deformed; his strength quite forsook him; his back-bone began to bend; his head hung forward; his legs grew weak; one of his shoulders turned awry; and his nose grew disproportionably large. With his strength, his natural spirits also forsook him; and, by the time he was twenty, he was grown feeble, decrepit, and marked with the strongest impressions of old age. It had been before remarked by some, that he would die of old age before he arrived at

thirty; and, in fact, by the time he was twenty-two, he could scarcely walk a hundred paces, being worn with the multiplicity of his years, and bent under the burden of protracted life. In this year he died: a cold, attended with a slight fever, threw him into a kind of lethargy, which had a few momentary intervals; but he could scarcely be brought to speak. However, it is asserted, that in the five last days of his life he showed a clearer understanding than in his times of best health; but at length he died, after enduring great agonies, in the twenty-second year of his age.

Opposite to this accidental diminution of the human race, is that of its extraordinary magnitude. Concerning the reality of a nation of giants there have been many disputes among the learned. Some have affirmed the probability of such a race, and others as warmly have denied the possibility of their existence. But it is not from any speculative reasonings upon a subject of this kind that information is to be obtained: it is not from the disputes of the scholar, but the labours of the enterprising, that we are to be instructed in this inquiry. Indeed, nothing can be more absurd than what some learned men have advanced upon this subject. It is very unlikely, says Grew, that there should either be dwarfs or giants; or if such, they cannot be fitted for the usual enjoyments of life and reason. Had man been born a dwarf, he could not have been a reasonable creature; for to that end he must have a jolt head, and then he would not have body and blood enough to supply

his brain with spirits: or if he had a small head, proportionable to his body, there would not be brain enough for conducting life. But it is still worse with giants; and there could never have been a nation of such, for there would not be food enough found in any country to sustain them; or if there were beasts sufficient for this purpose, there would not be grass enough for their maintenance. But what is still more, add others, giants could never be able to support the weight of their own bodies; since a man of ten feet high must be eight times as heavy as one of the ordinary stature, whereas he has but twice the size of muscles to support such a burden, and, consequently, would be overloaded with the weight of his own body. Such are the theories upon this subject; and they require no other answer, but that experience proves them both to be false: dwarfs are found capable of life and reason; and giants are seen to carry their own bodies. We have several accounts from mariners, that a nation of giants actually exists; and mere speculation should never induce us to doubt their veracity.

Ferdinand Magellan was the first who discovered this race of people along the coast towards the extremity of South America. Magellan was a Portuguese, of noble extraction, who having long behaved with great bravery under Albuquerque, the conqueror of India, he was treated with neglect by the court upon his return. Applying, therefore, to the King of Spain, he was intrusted with the command of five ships, to subdue the

Molucca Islands, upon one of which he was slain. It was in his voyage thither that he happened to winter in St Julian's Bay, an American harbour, forty-nine degrees south of the Line. In this desolate region, where nothing was seen but objects of terror, where neither trees nor verdure drest the face of the country, they remained for some months without seeing any human creature. They had judged the country to be utterly uninhabitable, when one day they saw approaching, as if he had been dropt from the clouds, a man of enormous stature, dancing and singing, and putting dust upon his head, as they supposed, in token of peace. This overture for friendship was, by Magellan's command, quickly answered by the rest of his men; and the giant approaching, testified every mark of astonishment and surprise. He was so tall that the Spaniards only reached his waist; his face was broad, his colour brown, and painted over with a variety of tints; each cheek had the resemblance of a heart drawn upon it; his hair was approaching to whiteness; he was clothed in skins, and armed with a bow. Being treated with kindness, and dismissed with some trifling presents, he soon returned with many more of the same stature, two of whom the mariners decoyed on shipboard: Nothing could be more gentle than they were in the beginning; they considered the fetters that were preparing for them as ornaments, and played with them like children with their toys; but when they found for what purpose they were intended, they instantly exerted their amazing strength, and broke

them in pieces with a very easy effort. This account, with a variety of other circumstances, has been confirmed by succeeding travellers: Herrera, Sebald Wert, Oliver, Van Noort, and James le Maire, all correspond in affirming the fact, although they differ in many particulars of their respective descriptions. The last voyager we have had that has seen this enormous race, is Commodore Byron. I have talked with the person who first gave the relation of that voyage, and who was the carpenter of the Commodore's ship; he was a sensible understanding man, and I believe extremely faithful. By him therefore I was assured, in the most solemn manner, of the truth of his relation; and this account has since been confirmed by one or two publications, in all which the particulars are pretty nearly the same. One of the circumstances which most puzzled me to reconcile to probability, was that of the horses on which they are described as riding down to the shore. We know the American horse to be of European breed, and in some measure to be degenerated from the original. I was at a loss, therefore, to account how a horse of not more than fourteen hands high was capable of carrying a man of nine feet, or, in other words, an animal almost as large as itself. But the wonder will cease when we consider, that so small a beast as an ass will carry a man of ordinary size tolerably well; and the proportion between this and the former instance is nearly exact. We can no longer, therefore, refuse our assent to the existence of this gigantic race of mankind. In what manner they are pro-

pagated, or under what regulations they live, is a subject that remains for future investigation. It should appear, however, that they are a wandering nation, changing their abode with the course of the sun, and shifting their situation for the convenience of food, climate, or pasture.*

This race of giants are described as possessed of great strength; and no doubt they must be very different from those accidental giants that are to be seen in different parts of Europe. Stature with these seems rather their infirmity than their pride; and adds to their burden, without increasing their strength. Of those I have seen, the generality were ill-formed and unhealthful; weak in their persons, or incapable of exerting what strength they were possessed of. The same defects of understanding that attended those of suppressed stature, were found in those who were thus overgrown; they were heavy, phlegmatic, stupid, and inclined to sadness. Their numbers, however, are but few; and it is thus kindly ordered by Providence, that as the middle state is the best fitted for happiness, so the middle ranks of mankind are produced in the greatest variety.

However, mankind seems naturally to have a respect for men of extraordinary stature; and it has been a supposition of long standing, that our ancestors were much taller, as well as much more beautiful than we. This has been, indeed, a theme of poetical declamation from the beginning; and man was scarcely formed when he began to deplore an imaginary decay. Nothing is more na-

* Later voyagers have not confirmed this account in some particulars.

tural than this progress of the mind, in looking up to antiquity with reverential wonder. Having been accustomed to compare the wisdom of our fathers with our own in early imbecility, the impression of their superiority remains when they no longer exist, and when we cease to be inferior. Thus the men of every age consider the past as wiser than the present, and the reverence seems to accumulate as our imaginations ascend. For this reason, we allow remote antiquity many advantages, without disputing their title: the inhabitants of uncivilized countries represent them as taller and stronger; and the people of a more polished nation, as more healthy and more wise. Nevertheless, these attributes seem to be only the prejudices of ingenuous minds; a kind of gratitude which we hope in turn to receive from posterity. The ordinary stature of men, Mr Derham observes, is in all probability the same now as at the beginning. The oldest measure we have of the human figure, is in the monument of Cheops, in the first pyramid of Egypt. This must have subsisted many hundred years before the time of Homer, who is the first that deplores the decay. This monument, however, scarcely exceeds the measure of our ordinary coffins; the cavity is no more than six feet long, two feet wide, and deep in about the same proportion. Several mummies also, of a very early age, are found to be only of the ordinary stature; and show that for these three thousand years, at least, men have not suffered the least diminution. We have many corroborating proofs of this, in the

ancient pieces of armour which are dug up in different parts of Europe. The brass helmet dug up at Medauro fits one of our men, and yet is allowed to have been left there at the overthrow of Asdrubal. Some of our finest antique statues, which we learn from Pliny and others to be exactly as big as the life, still continue to this day, remaining monuments of the superior excellence of their workmen indeed, but not of the superiority of their stature. We may conclude, therefore, that men have been in all ages pretty much of the same size they are at present; and that the only difference must have been accidental, or perhaps national.

As to the superior beauty of our ancestors, it is not easy to make the comparison: beauty seems a very uncertain charm, and frequently is less in the object than in the eye of the beholder. Were a modern lady's face formed exactly like the Venus of Medicis, or the sleeping vestal, she would scarcely be considered beautiful, except by the lovers of antiquity, whom, of all her admirers, perhaps, she would be least desirous of pleasing. It is true, that we have some disorders among us that disfigure the features, and from which the ancients were exempt; but it is equally true, that we want some which were common among them, and which were equally deforming. As for their intellectual powers, these also were probably the same as ours: we excel them in the sciences, which may be considered as a history of accumulated experience; and they excel us in the poetic arts, as they had the first rifling of all the striking images of nature.

CHAPTER VIII.

OF MUMMIES, WAX-WORKS, &c.

"MAN* is not content with the usual term of life, but he is willing to lengthen out his existence by art; and although he cannot prevent death, he tries to obviate his dissolution. It is natural to attempt to preserve even the most trifling relics of what has long given us pleasure; nor does the mind separate from the body without a wish, that even the wretched heap of dust it leaves behind may yet be remembered. The embalming practised in various nations, probably had its rise in this fond desire: an urn filled with ashes, among the Romans, served as a pledge of continuing affection; and even the grassy graves in our own church-yards are raised above the surface, with the desire that the body below should not be wholly forgotten. The soul, ardent after eternity for itself, is willing to procure, even for the body, a prolonged duration."

But of all nations the Egyptians carried this art to the highest perfection: as it was a principle of their religion to suppose the soul continued only coeval to the duration of the body, they tried every art to extend the life of the one, by preventing the dissolution of the other. In this practice they were exercised from the earliest ages; and the mummies they have embalmed in

* This chapter I have, in a great measure, translated from M. Daubenton. Whatever is added from others, is marked with inverted commas.

this manner continue in great numbers to the present day. We are told, in Genesis, that Joseph seeing his father expire, gave orders to his physicians to embalm the body, which they executed in the compass of forty days, the usual time of embalming. Herodotus also, the most ancient of the profane historians, gives us a copious detail of this art, as it was practised in his time among the Egyptians. There are certain men among them, says he, who practise embalming as a trade, which they perform with all expedition possible. In the first place they draw out the brain through the nostrils, with irons adapted to this purpose; and in proportion as they evacuate it in this manner, they fill up the cavity with aromatics; they next cut open the belly, near the sides, with a sharpened stone, and take out the entrails, which they cleanse, and wash in palm-oil: having performed this operation, they roll them in aromatic powder, fill them with myrrh, cassia, and other perfumes, except incense; and replace them, sewing up the body again. After these precautions they salt the body with nitre, and keep it in the salting place for seventy days, it not being permitted to preserve it so any longer. When the seventy days are accomplished, and the body washed once more, they swathe it in bands made of linen, which have been dipt in a gum the Egyptians use instead of salt. When the friends have taken back the body, they make a hollow trough, something like the shape of a man, in which they place the body; and this they enclose in a box, preserving the whole as a most precious

relic, placed against the wall. Such are the ceremonies used with regard to the rich; as for those who are contented with a humbler preparation, they treat them as follows: They fill a syringe with an odoriferous liquor extracted from the cedar tree, and, without making an incision, inject it up the body of the deceased, and then keep it in nitre, as long as in the former case. When the time is expired, they evacuate the body of the cedar liquor which had been injected; and such is the effect of this operation, that the liquor dissolves the intestines, and brings them away: the nitre also serves to eat away the flesh, and leaves only the skin and the bones remaining. This done, the body is returned to the friends, and the embalmer takes no farther trouble about it. The third method of embalming those of the meanest condition, is merely by purging and cleansing the intestines by frequent injections, and preserving the body for a similar term in nitre, at the end of which it is restored to the relations.

Diodorus Siculus also makes mention of the manner in which these embalmings are performed. According to him there were several officers appointed for this purpose; the first of them, who was called the scribe, marked those parts of the body, on the left side, which were to be opened; the cutter made the incision; and one of those that were to salt it, drew out all the bowels, except the heart and the kidneys; another washed them in palm-wine, and odoriferous liquors; afterwards they anointed, for above thirty days, with

cedar, gum, myrrh, cinnamon, and other perfumes. These aromatics preserved the body entire for a long time, and gave it a very agreeable odour. It was not in the least disfigured by this preparation; after which it was returned to the relations, who kept it in a coffin placed upright against the wall.

Most of the modern writers who have treated on this subject have merely repeated what has been said by Herodotus; and if they add any thing of their own, it is but merely from conjecture. Dumont observes, that it is very probable that aloes, bitumen, and cinnamon, make a principal part of the composition which is used on this occasion; he adds, that after embalming, the body is put into a coffin made of the sycamore tree, which is almost incorruptible. Mr Grew remarks, that in an Egyptian mummy in the possession of the Royal Society, the preparation was so penetrating as to enter into the very substance of the bones, and rendered them so black, that they seemed to have been burnt. From this he is induced to believe, that the Egyptians had a custom of embalming their dead, by boiling them in a kind of liquid preparation, until all the aqueous parts of the body were exhaled away, and until the oily or gummy matter had penetrated throughout. He proposes, in consequence of this, a method of macerating, and afterwards of boiling the dead body in oil of walnut.

I am, for my own part, of opinion, that there were several ways of preserving dead bodies from putrefaction; and that this would not be difficult,

since different nations have all succeeded in the attempt. We have an example of this kind among the Guanches, the ancient inhabitants of the island of Teneriffe. Those who survived the general destruction of this people by the Spaniards, when they conquered this island, informed them, that the art of embalming was still preserved there; and that there was a tribe of priests among them possessed of the secret, which they kept concealed as a sacred mystery. As the greatest part of the nation was destroyed, the Spaniards could not arrive at a complete knowledge of this art; they only found out a few of the particulars. Having taken out the bowels, they washed the body several times in a ley made of the dried bark of the pine tree, warmed during the summer by the sun, or by a stove in the winter. They afterwards anointed it with butter, or the fat of bears, which they had previously boiled with odoriferous herbs, such as sage and lavender. After this unction, they suffered the body to dry, and then repeated the operation as often as it was necessary, until the whole substance was impregnated with the preparation.—When it was become very light, it was then a certain sign that it was right, and properly prepared. They then rolled it up in the dried skins of goats, which, when they had a mind to save expense, they suffered to remain with the hair still growing upon them. Purchas assures us, that he has seen mummies of this kind in London; and mentions the name of a gentleman who had seen several of them in the island of Teneriffe, which were supposed to have been two

thousand years old, but without any certain proofs of such great antiquity. This people, who probably came first from the coasts of Africa, might have learned this art from the Egyptians, as there was a traffic carried on from thence into the most internal parts of Africa.

Father Acosta and Garcilasso de la Vega make no doubt but that the Peruvians understood the art of preserving their dead for a very long space of time. They assert their having seen the bodies of several Incas, that were perfectly preserved. They still preserved their hair and their eyebrows; but they had eyes made of gold put in the places of those taken out. They were clothed in their usual habits, and seated in the manner of the Indians, their arms placed on their breasts. Garcilasso touched one of their fingers, and found it apparently as hard as wood; and the whole body was not heavy enough to overburden a weak man, who should attempt to carry it away. Acosta presumes that these bodies were embalmed with bitumen, of which the Indians knew the properties. Garcilasso, however, is of a different opinion, as he saw nothing bituminous about them; but he confesses that he did not examine them very particularly; and he regrets his not having inquired into the methods used for that purpose. He adds, that being a Peruvian, his countrymen would not have scrupled to inform him of the secret, if they really had it still among them.

Garcilasso, thus being ignorant of the secret, makes use of some inductions to throw light upon the subject. He asserts, that the air is so

dry and so cold at Cusco, that flesh dries there like wood, without corrupting; and he is of opinion, that they dried the body in snow, before they applied the bitumen. He adds, that in the time of the Incas they usually dried the flesh which was designed for the use of the army; and that when they had lost their humidity, they might be kept without salt, or any other preparation.

It is said, that at Spitzbergen, which lies within the arctic circle, and, consequently, in the coldest climate, bodies never corrupt, nor suffer any apparent alteration, even though buried for thirty years. Nothing corrupts or putrefies in that climate; the wood which has been employed in building those houses where the train oil is separated, appears as fresh as the day it was first cut.

If excessive cold, therefore, be thus capable of preserving bodies from corruption, it is not less certain that a great degree of dryness, produced by heat, produces the same effect. It is well known, that the men and animals that are buried in the sands of Arabia, quickly dry up, and continue in preservation for several ages, as if they had been actually embalmed. It has often happened, that whole caravans have perished in crossing those deserts, either by the burning winds that infest them, or by the sands which are raised by the tempest, and overwhelm every creature in certain ruin. The bodies of those persons are preserved entire; and they are often found in this condition by some accidental passenger. Many authors, both ancient and mo-

dern, make mention of such mummies as these; and Shaw says, that he has been assured that numbers of men, as well as other animals, have been thus preserved, for times immemorial, in the burning sands of Saibah, which is a place, he supposes, situate between Rasem and Egypt.

The corruption of dead bodies being entirely caused by the fermentation of the humours, whatever is capable of hindering or retarding this fermentation will contribute to their preservation. Both heat and cold, though so contrary in themselves, produce similar effects in this particular, by drying up the humours. The cold, in condensing and thickening them, and the heat, in evaporating them before they have time to act upon the solids. But it is necessary that these extremes should be constant; for if they succeed each other, so as that cold should follow heat, or dryness humidity, it must then necessarily happen, that corruption must ensue. However, in temperate climates there are natural causes capable of preserving dead bodies; among which we may reckon the qualities of the earth in which they are buried. If the earth be drying and astringent, it will imbibe the humidity of the body; and it may be probably for this reason that the bodies buried in the monastery of the Cordeliers at Thoulouse, do not putrefy, but dry in such a manner that they may be lifted up by one arm.

The gums, resins, and bitumens, with which dead bodies are embalmed, keep off the impressions which they would else receive from the

alteration of the temperature of the air; and still more, if a body thus prepared be placed in a dry or burning sand, the most powerful means will be united for its preservation. We are not to be surprised, therefore, at what we are told by Chardin, of the country of Chorosan in Persia. The bodies which have been previously embalmed, and buried in the sands of that country, as he assures us, are found to petrify, or, in other words, to become extremely hard, and are preserved for several ages. It is asserted, that some of them have continued for a thousand years.

The Egyptians, as has been mentioned above, swathed the body with linen bands, and enclosed it in a coffin; however, it is probable that, with all these precautions, they would not have continued till now, if the tombs, or pits, in which they were placed had not been dug in a dry chalky soil, which was not susceptible of humidity, and which was, besides, covered over with a dry sand of several feet in thickness.

The sepulchres of the ancient Egyptians subsist to this day. Most travellers who have been in Egypt have described those of ancient Memphis, and have seen the mummies interred there. These catacombs are within two leagues of the ruins of this city, nine leagues from Grand Cairo, and about two miles from the village of Zaccara. They extend from thence to the pyramids of Pharaoh, which are about eight miles distant. These sepulchres lie in a field, covered with a fine running sand of a yellowish colour. The country is dry and hilly; the entrance of

the tombs is choked up with sand; there are many open, but several more that are still concealed. The inhabitants of the neighbouring village have no other commerce, or method of subsisting, but by seeking out mummies, and selling them to such strangers as happen to be at Grand Cairo. "This commerce, some years ago, was not only a very common, but a very gainful one. A complete mummy was often sold for twenty pounds: but it must not be supposed that it was bought at such a high price from a mere passion for antiquity; there were much more powerful motives for this traffic. Mummy, at that time, made a considerable article in medicine; and a thousand imaginary virtues were ascribed to it, for the cure of most disorders, particularly of the paralytic kind. There was no shop, therefore, without mummy in it; and no physician thought he had properly treated his patient, without adding this to his prescription. Induced by the general repute in which this supposed drug was at that time, several Jews, both of Italy and France, found out the art of imitating mummy so exactly, that they for a long time deceived all Europe. This they did by drying dead bodies in ovens, after having prepared them with myrrh, aloes, and bitumen. Still, however, the request for mummies continued, and a variety of cures were daily ascribed to them. At length Paræus wrote a treatise on their total inefficacy in physic, and showed their abuse in loading the stomach, to the exclusion of more efficacious medicines. From that time,

therefore, their reputation began to decline; the Jews discontinued their counterfeits, and the trade returned entire to the Egyptians, when it was no longer of value. The industry of seeking after mummies is now totally relaxed, their price merely arbitrary, and just what the curious are willing to give."

In seeking for mummies, they first clear away the sand, which they may do for weeks together, without finding what is wanted. Upon coming to a little square opening, of about eighteen feet in depth, they descend into it, by holes for the feet, placed at proper intervals; and there they are sure of finding what they seek for. These caves, or wells, as they call them, are hollowed out of a white free-stone, which is found in all this country a few feet below the covering of sand. When one gets to the bottom of these, which are sometimes forty feet below the surface, there are several square openings, on each side, into passages of ten or fifteen feet wide, and these lead to chambers of fifteen or twenty feet square. These are all hewn out of the rock; and in each of the catacombs are to be found several of these apartments, communicating with each other. They extend a great way under ground, so as to be under the city of Memphis, and in a manner to undermine its environs.

In some of the chambers, the walls are adorned with figures and hieroglyphics; in others, the mummies are found in tombs round the apartment, hollowed out in the rock. These tombs are upright, and cut into the shape of a man,

with his arms stretched out. There are others found, and these in the greatest number, in wooden coffins, or in clothes covered with bitumen. These coffins, or wrappers, are covered all over with a variety of ornaments. There are some of them painted, and adorned with figures, such as that of death, and with leaden seals, on which several characters are engraven. Some of these coffins are carved into the human shape; but the head alone is distinguishable; the rest of the body is all of a piece, and terminated by a pedestal, while there are some with their arms hanging down; and it is by these marks that the bodies of persons of rank are distinguished from those of the meaner order. These are generally found lying on the floor, without any profusion of ornaments; and in some chambers the mummies are found indiscriminately piled upon each other, and buried in the sand.

Many mummies are found lying on their backs; their heads turned to the north, and their hands placed on the belly. The bands of linen with which these are swathed are found to be more than a thousand yards long; and, of consequence, the number of circumvolutions they make about the body must have been amazing. These were performed by beginning at the head, and ending at the feet; but they contrived it so as to avoid covering the face. However, when the face is entirely uncovered, it moulders into dust immediately upon the admission of the air. When, therefore, it is preserved entire, a slight covering of cloth is so disposed over it, as that

the shape of the eyes, the nose, and the mouth, are seen under it. Some mummies have been found with a long beard, and hair that reached down to the mid-leg, nails of a surprising length, and some gilt, or at least painted of a gold colour. Some are found with bands upon the breast, covered with hieroglyphics, in gold, silver, or in green; and some with tutelary idols, and other figures of jasper, within their body. A piece of gold, also, has often been found under their tongues, of about two pistoles value; and, for this reason, the Arabians spoil all the mummies they meet with, in order to get at the gold.

But though art, or accident, has thus been found to preserve dead bodies entire, it must by no means be supposed that it is capable of preserving the exact form and lineaments of the deceased person. Those bodies which are found dried away in the deserts, or in some particular church-yards, are totally deformed, and scarcely any lineaments remain of their external structure. Nor are the mummies preserved by embalming in a better condition. The flesh is dried away, hardened, and hidden under a variety of bandages; the bowels, as we have seen, are totally removed; and from hence, in the most perfect of them, we see only a shapeless mass of skin discoloured, and even the features scarcely distinguishable. The art is, therefore, an effort rather of preserving the substance than the likeness of the deceased; and has, consequently, not been brought to its highest pitch of perfection. It appears from a mummy not long since dug up in

France, that the art of embalming was more completely understood in the western world than even in Egypt. This mummy, which was dug up at Auvergne, was an amazing instance of their skill, and is one of the most curious reliques in the art of preservation. As some peasants in that part of the world were digging in a field near Rion, within about twenty-six paces of the highway, between that and the river Artier, they discovered a tomb, about a foot and a half beneath the surface. It was composed only of two stones; one of which formed the body of the sepulchre, and the other the cover. This tomb was of free-stone; seven feet and a half long, three feet and a half broad, and about three feet high. It was of rude workmanship; the cover had been polished, but was without figure or inscription; within this tomb was placed a leaden coffin, four feet seven inches long, fourteen inches broad, and fifteen high. It was not made coffin fashion, but oblong, like a box, equally broad at both ends, and covered with a lid that fitted on like a snuff-box, without a hinge. This cover had two holes in it, each of about two inches long, and very narrow, filled with a substance resembling butter; but for what purpose intended remains unknown. Within this coffin was a mummy, in the highest and most perfect preservation. The internal sides of the coffin were filled with an aromatic substance, mingled with clay. Round the mummy was wrapped a coarse cloth, in form of a napkin; under this were two shirts, or shrouds, of the most exquisite texture; beneath these a bandage, which covered

all parts of the body, like an infant in swaddling clothes; still under this general bandage there was another, which went particularly round the extremities, the hands, and the legs: The head was covered with two caps; the feet and hands were without any particular bandages; and the whole body was covered with an aromatic substance, an inch thick. When these were removed, and the body exposed naked to view, nothing could be more astonishing than the preservation of the whole, and the exact resemblance it bore to a body that had been dead a day or two before. It appeared well proportioned, except that the head was rather large, and the feet small. The skin had all the pliancy and colour of a body lately dead; the visage, however, was of a brownish hue. The belly yielded to the touch; all the joints were flexible, except those of the legs and feet; the fingers stretched forth of themselves when bent inwards. The nails still continued entire; and all the marks of the joints, both in the fingers, the palms of the hands, and the soles of the feet, remained perfectly visible. The bones of the arms and legs were soft and pliant; but, on the contrary, those of the skull preserved their rigidity: the hair, which only covered the back of the head, was of a chesnut colour, and about two inches long. The pericranium at top was separated from the skull, by an incision, in order to open it for the introducing proper aromatics in the place of the brain, where they were found mixed with clay. The teeth, the tongue, and the ears, were all preserved in perfect form. The

intestines were not taken out of the body, but remained pliant and entire, as in a fresh subject; and the breast was made to rise and fall like a pair of bellows; the embalming preparation had a very strong and pungent smell, which the body preserved for more than a month after it was exposed to the air. This odour was perceived wherever the mummy was laid; although it remained there but a very short time, it was even pretended that the peasants of the neighbouring villages were incommoded by it. If one touched either the mummy, or any part of the preparation, the hands smelled of it for several hours after, although washed with water, spirit of wine, or vinegar. This mummy having remained exposed for some months to the curiosity of the public, began to suffer some mutilations. A part of the skin of the forehead was cut off; the teeth were drawn out, and some attempts were made to pull away the tongue. It was therefore put into a glass case, and shortly after transmitted to the king of France's cabinet, at Paris.

There are many reasons to believe this to be the body of a person of the highest distinction; however, no marks remain to assure us either of the quality of the person, or the time of his decease. There only are to be seen some irregular figures on the coffin; one of which represents a kind of star. There were also some singular characters upon the bandages, which were totally defaced by those who had torn them away. However, it should seem that it had remained for several ages in this state, since the first years im-

mediately succeeding the interment, are usually those in which the body is most liable to decay. It appears also to be a much more perfect method of embalming than that of the Egyptians; as in this the flesh continues with its natural elasticity and colour, the bowels remain entire, and the joints have almost the pliancy which they had when the person was alive. Upon the whole, it is probable that a much less tedious preparation than that used by the Egyptians would have sufficed to keep the body from putrefaction; and that an injection of petreoleum inwardly, and a layer of asphaltum without, would have sufficed to have made a mummy; and it is remarkable that Auvergne, where this was found, affords these two substances in sufficient plenty. This art, therefore, might be brought to greater perfection than it has arrived at hitherto, were the art worth preserving. But mankind have long since grown wiser in this respect, and think it unnecessary to keep by them a deformed carcass, which, instead of aiding their magnificence, must only serve to mortify their pride.

CHAPTER IX.

OF ANIMALS.

Leaving man, we now descend to the lower ranks of animated nature, and prepare to examine the life, manners, and characters of these our humble

partners in the creation. But, in such a wonderful variety as is diffused around us, where shall we begin? The number of beings endued with life as well as we, seems, at first view, infinite. Not only the forest, the waters, the air, teems with animals of various kinds; but almost every vegetable, every leaf, has millions of minute inhabitants, each of which fills up the circle of its allotted life, and some of them are found objects of the greatest curiosity. In this seeming exuberance of animals, it is natural for ignorance to lie down in hopeless uncertainty, and to declare what requires labour to particularize to be utterly inscrutable. It is otherwise, however, with the active and searching mind: no way intimidated with the immense variety, it begins the task of numbering, grouping, and classing all the various kinds that fall within its notice; finds every day new relations between the several parts of the creation, acquires the art of considering several at a time under one point of view; and at last begins to find, that the variety is neither so great nor so inscrutable as was at first imagined. As, in a clear night, the number of the stars seems infinite, yet, if we sedulously attend to each in its place, and regularly class them, they will soon be found to diminish, and come within a very scanty computation.

Method is one of the principal helps in natural history, and without it very little progress can be made in this science. It is by that alone we can hope to dissipate the glare, if I may so express it, which arises from a multiplicity of objects at once

presenting themselves to the view. It is method that fixes the attention to one point, and leads it, by slow and certain degrees, to leave no part of nature unobserved.

All naturalists, therefore, have been very careful in adopting some method of classing or grouping the several parts of nature; and some have written books of natural history with no other view. These methodical divisions some have treated with contempt,* not considering that books in general are written with opposite views—some to be read, and some only to be occasionally consulted. The methodists in natural history seem to be content with the latter advantage, and have sacrificed to order alone all the delights of the subject, all the arts of heightening, awakening, or continuing curiosity. But they certainly have the same use in science that a dictionary has in language; but with this difference, that in a dictionary we proceed from the name to the definition; in a system of natural history, we proceed from the definition to find out the thing. Without the aid of system, nature must still have lain undistinguished, like furniture in a lumber room; every thing we wish for is there, indeed, but we know not where to find it. If, for instance, in a morning excursion, I find a plant, or an insect, the name of which I desire to learn, or perhaps am curious to know whether already known; in this inquiry I can expect information only from one of these systems, which, being

* M. Buffon in his Introduction, &c.

couched in a methodical form, quickly directs me to what I seek for. Thus we will suppose that our inquirer has met with a spider, and that he has never seen such an insect before. He is taught by the writer of a system* to examine whether it has wings, and he finds that it has none; he therefore is to look for it among the wingless insects, or the Aptera, as Linnæus calls them: he then is to see whether the head and breast make one part of the body, or are disunited; he finds they make one: he is then to reckon the number of feet and eyes; and he finds that it has eight of each. The insect, therefore, must be either a scorpion or a spider; but he lastly examines its feelers, which he finds clavated or clubbed: and by all these marks he at last discovers it to be a spider. Of spiders there are above forty sorts; and by reading the description of each, the inquirer will learn the name of that which he desires to know. With the name of the insect, he is also directed to those authors that have given any account of it, and the page where that account is to be found; by this means he may know at once what has been said of that animal by others, and what there is of novelty in the result of his own researches.

From hence it will appear how useful those systems in natural history are to the inquirer; but having given them all their merit, it would be wrong not to observe, that they have in general been very much abused. Their authors, in gene-

* Linnæus.

ral, seem to think that they are improvers of natural history, when in reality they are but guides; they seem to boast that they are adding to our knowledge, while they are only arranging it. These authors also seem to think, that the reading of their works and systems is the best method to attain a knowledge of nature. But setting aside the impossibility of getting through whole volumes of a dry long catalogue, the multiplicity of whose contents is too great for even the strongest memory, such works rather tell us the names than the history of the creatures we desire to inquire after. In these dreary pages, every insect or plant that has a name makes as distinguished a figure as the most wonderful or the most useful. The true end of studying nature is to make a just selection, to find those parts of it that most conduce to our pleasure or convenience, and to leave the rest in neglect. But these systems, employing the same degree of attention upon all, give us no opportunities of knowing which most deserves attention; and he who has made his knowledge from such systems only, has his memory crowded with a number of trifling or minute particulars, which it should be his business and his labour to forget. These books, as was said before, are useful to be consulted, but they are very unnecessary to be read; no inquirer into nature should be without one of them, and without any doubt, Linnæus deserves the preference.

One fault more in almost all these systematic writers, and that which leads me to the subject of the present chapter, is, that seeing the necessity

of methodical distribution in some parts of nature, they have introduced it into all. Finding the utility of arranging plants, birds, or insects, they have arranged quadrupeds also with the same assiduity; and although the number of these is so few as not to exceed two hundred, they have darkened the subject with distinctions and divisions, which only serve to puzzle and perplex. All method is only useful in giving perspicuity where the subject is either dark or copious: but with regard to quadrupeds, the number is but few; many of them we are well acquainted with by habit, and the rest may very readily be known without any method. In treating of such, therefore, it would be useless to confound the reader with a multiplicity of divisions; as quadrupeds are conspicuous enough to obtain the second rank in nature, it becomes us to be acquainted with at least the names of them all. However, as there are naturalists who have gained a name from the excellence of their methods in classing these animals, some readers may desire to have a knowledge of what has been laboriously invented for their instruction. I will just take leave, therefore, to mention the most applauded methods of classing animals, as adopted by Ray, Klein, and Linnæus; for it often happens, that the terms which have been long used in a science, though frivolous, become by prescription a part of the science itself.

Ray, after Aristotle, divides all animals into two kinds; those which have blood, and those which are bloodless. In the last class he places

all the insect tribes. The former he divides into such as breathe through the lungs, and such as breathe through gills: these last comprehend the fishes. In those which breathe through the lungs, some have the heart composed of two ventricles, and some have it of one. Of the last are all animals of the cetaceous kind, all oviparous quadrupeds, and serpents. Of those that have two ventricles, some are oviparous, which are the birds; and some viviparous, which are quadrupeds. The quadrupeds he divides into such as have a hoof, and such as are claw-footed. Those with the hoof he divides into such as have it undivided, such as have it cloven, and such as have the hoof divided into more parts, as the rhinoceros and hippopotamus. Animals with the cloven hoof he divides into such as chew the cud, as the cow and the sheep; and such as are not ruminant, as the hog. He divides those animals that chew the cud into four kinds: the first have hollow horns, which they never shed, as the cow; the second is of a less species, and is of the sheep kind; the third is of the goat kind; and the last, which have solid horns, and shed them annually, are of the deer kind. Coming to the claw-footed animals, he finds some with large claws, resembling the fingers of the human hand; and these he makes the ape kind. Of the others, some have the foot divided in two, and have a claw to each division; these are the camel kind. The elephant makes a kind by itself, as its claws are covered over by a skin. The rest of the numerous tribe of claw-footed animals he divides into two kinds; the analogous, or

such as resemble each other; and the anomalous, which differ from the rest. The analogous claw-footed animals are of two kinds; they have more than two cutting teeth in each jaw, such as the lion and the dog, which are carnivorous; or they have but two cutting teeth in each jaw, and these are chiefly fed upon vegetables. The carnivorous kinds are divided into the great and the little. The great carnivorous animals are divided into such as have a short snout, as the cat and the lion; and such as have it long and pointed, as the dog and the wolf. The little claw-footed carnivorous animals differ from the great, in having a proportionably smaller head, and a slender body, that fits them for creeping into holes in pursuit of their prey, like worms; and they are therefore called the vermin kind.

We see from this sketch of division and subdivision, how a subject, extremely delightful and amusing in itself, may be darkened, and rendered disgusting. But, notwithstanding, Ray seems to be one of the most simple distributors; and his method is still, and not without reason, adopted by many. Such as have been at the trouble to learn this method, will certainly find it useful; nor would we be thought in the least to take from its merits; all we contend for is, that the same information may be obtained by a pleasanter and an easier method.

It was the great success of Ray's method that soon after produced such a variety of attempts in the same manner; but almost all less simple, and more obscure. M. Klein's method is briefly as

follows: he makes the power of changing place the characteristic mark of animals in general; and he takes their distinctions from their aptitude and fitness for such a change. Some change place by means of feet, or some similar contrivance, others have wings and feet; some can change place only in water, and have only fins; some go upon earth without any feet at all; some change place by moving their shell; and some move only at a certain time of the year. Of such, however, as do not move at all, he takes no notice. The quadrupeds that move chiefly by means of four feet upon land, he divides into two orders; the first are the hoofed kind, and the second the claw kind. Each of these orders is divided into four families. The first family of the hoofed kind are the single hoofed, such as the horse, ass, &c. The second family are such as have the hoof cloven into two parts, such as the cow, &c. The third family have the hoof divided into three parts, and in this family is found only the rhinoceros. The fourth family have the hoof divided into five parts, and in this is only to be found the elephant. With respect to the clawed kind, the first family comprehends those that have but two claws on each foot, as the camel; the second family have three claws; the third, four; and the fourth, five. This method of taking the distinctions of animals from the organs of motion, is ingenious, but it is at the same time incomplete; and, besides the divisions into which it must necessarily fall, is inadequate; since, for instance, in his family with two claws, there is but one animal; whereas, in

his family with five claws, there are above a hundred.

Brisson, who has laboured this subject with great accuracy, divides animated nature into nine classes: namely, quadrupeds; cetaceous animals, or those of the whale kind; birds; reptiles, or those of the serpent kind; cartilaginous fishes; spinous fishes; shelled animals; insects; and worms. He divides the quadrupeds into eighteen orders, and takes their distinctions from the number and form of their teeth.

But of all those whose systems have been adopted and admired, Linnæus is the foremost; as, with a studied brevity, his system comprehends the greatest variety in the smallest space.

According to him, the first distinction of animals is to be taken from their internal structure. Some have the heart with two ventricles, and hot red blood; namely, quadrupeds and birds. The quadrupeds are viviparous, and the birds oviparous.

Some have the heart with only one ventricle, and cold red blood; namely, amphibia and fishes. The amphibia are furnished with lungs; the fishes with gills.

Some have the heart with one ventricle, and cold white serum; namely, insects and worms: the insects have feelers; and the worms holders.

The distinctions of quadrupeds, or animals with paps, as he calls them, are taken from their teeth. He divides them into seven orders, to which he gives names that are not easy of translation: Primates, or principals, with four cutting teeth in

each jaw; Bruta, or brutes, with no cutting teeth; Feræ, or wild beasts, with generally six cutting teeth in each jaw; Glires, or dormice, with two cutting teeth, both above and below; Pecora, or cattle, with many cutting teeth above, and none below; Belluæ, or beasts, with the fore-teeth blunt; Cete, or those of the whale kind, with cartilaginous teeth. I have but just sketched out this system, as being, in its own nature, the closest abridgment. It would take volumes to dilate it to its proper length. The names of the different animals, and their classes, alone makes two thick octavo volumes; and yet nothing is given but the slightest description of each. I have omitted all criticism also upon the accuracy of the preceding systems: this has been done both by Buffon and Daubenton, not with less truth than humour; for they had too much good sense not to see the absurdity of multiplying the terms of science to no end, and disappointing our curiosity rather with a catalogue of nature's varieties than a history of nature.

Instead, therefore, of taxing the memory and teasing the patience with such a variety of divisions and subdivisions, I will take leave to class the productions of nature in the most obvious, though not in the most accurate manner. In natural history, of all other sciences, there is the least danger of obscurity. In morals, or in metaphysics, every definition must be precise, because those sciences are built upon definitions; but it is otherwise in those subjects where the exhibition of the object itself is always capable of correcting

the error. Thus it may often happen, that in a lax system of natural history, a creature may be ranked among quadrupeds that belongs more properly to the fish or the insect classes. But that can produce very little confusion, and every reader can thus make a system the most agreeable to his own imagination. It will be of no manner of consequence whether we call a bird or an insect a quadruped, if we are careful in marking all its distinctions: the uncertainty in reasoning, or thinking, that those approximations of the different kinds of animals produce, is but very small, and happens but very rarely; whereas the labour that naturalists have been at to keep the kinds asunder, has been excessive. This, in general, has given birth to that variety of systems which we have just mentioned, each of which seems to be almost as good as the preceding.

Taking, therefore, this latitude, and using method only where it contributes to conciseness or perspicuity, we shall divide animated nature into four classes; namely, quadrupeds, birds, fishes, and insects. All these seem in general pretty well distinguished from each other by nature; yet there are several instances in which we can scarcely tell whether it is a bird or quadruped that we are about to examine; whether it is a fish or an insect that offers to our curiosity. Nature is varied by imperceptible gradations, so that no line can be drawn between any two classes of its productions, and no definition made to comprehend them all. However, the distinctions between these classes are sufficiently marked, and their encroachments

upon each other are so rare, that it will be sufficient particularly to apprize the reader when they happen to be blended.

There are many quadrupeds that we are well acquainted with; and of those we do not know we shall form the most clear and distinct conceptions, by being told wherein they differ, and wherein they resemble those with which we are familiar. Each class of quadrupeds may be ranged under some one of the domestic kinds, that may serve for the model by which we are to form some kind of idea of the rest. Thus we may say that a tiger is of the cat kind, a wolf of the dog kind, because there are some rude resemblances between each; and a person who has never seen the wild animals, will have some incomplete knowledge of their figure from the tame ones. On the contrary, I will not, as some systematic writers have done,* say that a bat is of the human kind, or a hog of the horse kind, merely because there is some resemblance in their teeth, or their paps. For, although this resemblance may be striking enough, yet a person who has never seen a bat or a hog, will never form any just conception of either by being told of this minute similitude. In short, the method in classing quadrupeds should be taken from their most striking resemblances; and where these do not offer, we should not force the similitude, but leave the animal to be described as a solitary species. The number of quadrupeds is so few, that indeed, without any method whatever, there is no great danger of confusion.

* Linnæi Syst.

All quadrupeds, the number of which, according to Buffon, amounts to about two hundred, may be classed in the following manner.

First, those of the Horse kind. This class contains the Horse, the Ass, and the Zebra. Of these, none have horns; and their hoof is of one solid piece.

The second class is that of the Cow kind; comprehending the Urus, the Buffalo, the Bison, and the Bonassus. These have cloven hoofs, and chew the cud.

The third class is that of the Sheep kind, with cloven hoofs, and chewing the cud like the former. In this is comprehended the Sheep, the Goat, the Lama, the Vigogne, the Gazelle, the Guinea-deer, and all of a similar form.

The fourth class is that of the Deer kind, with cloven hoofs, and with solid horns that are shed every year. This class contains the Elk, the Reindeer, the Stag, the Buck, the Roebuck, and the Axis.

The fifth class comprehends all those of the Hog kind, the Peccary, and the Babyrouessa.

The sixth class is that numerous one of the Cat kind. This comprehends the Cat, the Lion, the Panther, the Leopard, the Jaguar, the Couguar, the Jaguarette, the Lynx, the Ounce, and the Catamountain. These are all carnivorous, and furnished with crooked claws, which they can sheath and unsheath at pleasure.

The seventh class is that of the Dog kind, carnivorous, and furnished with claws like the former, but which they cannot sheath. This class

comprehends the Dog, the Wolf, the Fox, the Jackall, the Isatis, the Hyæna, the Civet, the Gibet, and the Genet.

The eighth class is that of the Weasel kind, with a long small body, with five toes, or claws, on each foot; the first of them separated from the rest like a thumb. This comprehends the Weasel, the Martin, the Polecat, the Ferret, the Mangoust, the Vansire, the Ermine, with all the varieties of the American Moufettes.

The ninth class is that of the Rabbit kind, with two large cutting teeth in each jaw. This comprehends the Rabbit, the Hare, the Guinea-pig, all the various species of the Squirrel, the Dormouse, the Marmot, the Rat, the Mouse, the Agouti, the Paca, the Aperea, and the Tapeti.

The tenth class is that of the Hedgehog kind, with claw feet, and covered with prickles, comprehending the Hedgehog and the Porcupine, the Couando, and the Urson.

The eleventh class is that of the Tortoise kind, covered with a shell or scales. This comprehends the Tortoise, the Pangolin, and the Phatagin.

The twelfth is that of the Otter, or amphibious kind, comprehending the Otter, the Beaver, the Desman, the Morse, and the Seal.

The thirteenth class is that of the Ape and Monkey kinds, with hands, and feet resembling hands.

The fourteenth class is that of winged quadrupeds, or the Bat kind, containing the Bat, the Flying Squirrel, and some other varieties.

The animals which seem to approach no other kind, either in nature or in form, but to make each a distinct species in itself, are the following: the Elephant, the Rhinoceros, the Hippopotamus, the Camelopard, the Camel, the Bear, the Badger, the Tapir, the Cabiai, the Coati, the Ant-bear, the Tatau, and lastly the Sloth.

All other quadrupeds whose names are not set down, will be found among some of the above-mentioned classes, and referred to that which they most resemble. When therefore we are at a loss to know the name of any particular animal, by examining which of the known kinds it most resembles, either in shape, or in hoofs, or claws, and then examining the particular description, we shall be able to discover, not only its name, but its history. I have already said that all methods of this kind are merely arbitrary, and that nature makes no exact distinction between her productions. It is hard, for instance, to tell whether we ought to refer the civet to the dog or the cat kind; but, if we know the exact history of the civet, it is no great matter to which kind we shall judge it to bear the greatest resemblance. It is enough that a distribution of this kind excites in us some rude outlines of the make, or some marked similitudes in the nature of these animals; but to know them with any precision, no system, or even description will serve, since the animal itself, or a good print of it, must be seen, and its history be read at length, before it can be said to be known. To pretend to say that we have an idea of a quadruped, because we can tell the

number, or the make of its teeth, or its paps, is as absurd as if we should pretend to distinguish men by the buttons on their clothes. Indeed it often happens that the quadruped itself can be but seldom seen; that many of the more rare kinds do not come into Europe above once in an age, and some of them have never been able to bear the removal: in such a case, therefore, there is no other substitute but a good print of the animal to give an idea of its figure, for no description whatsoever can answer this purpose so well. Mr Locke, with his usual good sense, has observed, that a drawing of the animal, taken from the life, is one of the best methods of advancing natural history; and yet, most of our modern systematic writers are content rather with describing. Descriptions, no doubt, will go some way towards giving an idea of the figure of an animal; but they are certainly much the longest way about, and, as they are usually managed, much the most obscure. In a drawing we can, at a single glance, gather more instruction than by a day's painful investigation of methodical systems, where we are told the proportions with great exactness, and yet remain ignorant of the totality. In fact, this method of describing all things is a fault that has infected many of our books that treat on the meaner arts, for this last age. They attempt to teach by words what is only to be learnt by practice and inspection. Most of our dictionaries, and bodies of arts and sciences, are guilty of this error. Suppose, for instance, it be requisite to mention the manner of making shoes, it is plain

that all the verbal instructions in the world will never give an adequate idea of this humble art, or teach a man to become a shoemaker. A day or two in a shoemaker's shop will answer the end better than a whole folio of instruction, which only serves to oppress the learner with the weight of its pretended importance. We have lately seen a laborious work carried on at Paris, with this only intent of teaching all the trades by description: however, the design at first blush seems to be ill considered; and it is probable that very few advantages will be derived from so laborious an undertaking. With regard to the descriptions in natural history, these, without all question, under the direction of good sense, are necessary; but still they should be kept within proper bounds; and where a thing may be much more easily shown than described, the exhibition should ever precede the account.

CHAPTER X.

OF QUADRUPEDS IN GENERAL, COMPARED TO MAN.

Upon comparing the various animals of the globe with each other, we shall find that Quadrupeds demand the rank immediately next ourselves; and, consequently, come first in consideration. The similitude between the structure of their bodies and ours, those instincts which they enjoy

in a superior degree to the rest, their constant services, or their unceasing hostilities, all render them the foremost objects of our curiosity, and the most interesting parts of animated nature. These, however, although now so completely subdued, very probably, in the beginning, were nearer upon an equality with us, and disputed the possession of the earth. Man, while yet savage himself, was but ill qualified to civilize the forest. While yet naked, unarmed, and without shelter, every wild beast was a formidable rival; and the destruction of such was the first employment of heroes. But, when he began to multiply, and arts to accumulate, he soon cleared the plains of the most noxious of these his rivals; a part was taken under his protection and care, while the rest found a precarious refuge in the burning desert, or the howling wilderness.

From being rivals, quadrupeds have now become the assistants of man; upon them he devolves the most laborious employments, and finds in them patient and humble coadjutors, ready to obey, and content with the smallest retribution. It was not, however, without long and repeated efforts that the independent spirit of these animals was broken; for the savage freedom, in wild animals, is generally found to pass down through several generations before it is totally subdued. Those cats and dogs that are taken from a state of natural wildness in the forest, transmit their fierceness to their young; and, however concealed in general, it breaks out upon several occasions. Thus the assiduity and application of man in bringing them

up, not only alters their disposition, but their very forms; and the difference between animals in a state of nature and domestic tameness is so considerable, that M. Buffon has taken this as a principal distinction in classing them.

In taking a cursory view of the form of quadrupeds, we may easily perceive that, of all the ranks of animated nature, they bear the nearest resemblance to man. This similitude will be found more striking, when, erecting themselves on their hinder feet, they are taught to walk forward in an upright posture. We then see that all their extremities in a manner correspond with ours, and present us with a rude imitation of our own. In some of the ape kind the resemblance is so striking, that anatomists are puzzled to find in what part of the human body man's superiority consists; and scarcely any but the metaphysician can draw the line that ultimately divides them.

But if we compare their internal structure with our own, the likeness will be found still to increase, and we shall perceive many advantages they enjoy in common with us, above the lower tribes of nature. Like us, they are placed above the class of birds, by bringing forth their young alive; like us, they are placed above the class of fishes, by breathing through the lungs; like us, they are placed above the class of insects, by having red blood circulating through their veins; and lastly, like us, they are different from almost all the other classes of animated nature, being either wholly or partly covered with hair. Thus nearly are we represented in point of conformation to the class

of animals immediately below us; and this shews what little reason we have to be proud of our persons alone, to the perfection of which quadrupeds make such very near approaches.

The similitude of quadrupeds to man obtains also in the fixedness of their nature, and their being less apt to be changed by the influence of climate or food than the lower ranks of nature.* Birds are found very apt to alter both in colour and size; fishes, likewise, still more; insects may be quickly brought to change and adapt themselves to the climate; and if we descend to plants, which may be allowed to have a kind of living existence, their kinds may be surprisingly and readily altered, and taught to assume new forms. The figure of every animal may be considered as a kind of drapery, which it may be made to put on or off by human assiduity: in man the drapery is almost invariable; in quadrupeds it admits of some variation; and the variety may be made greater still as we descend to the inferior classes of animal existence.

Quadrupeds, although they are thus strongly marked, and in general divided from the various kinds around them, yet some of them are often of so equivocal a nature, that it is hard to tell whether they ought to be ranked in the quadruped class, or degraded to those below them. If, for instance, we were to marshal the whole group of animals round man, placing the most perfect next him, and those most equivocal near the

* Buffon, vol. xviii. p. 179.

classes they most approach, we should find it difficult, after the principal had taken their stations near him, where to place many that lie at the outskirts of this phalanx. The bat makes a near approach to the aerial tribe, and might by some be reckoned among the birds. The porcupine has not less pretensions to that class, being covered with quills, and showing that birds are not the only part of nature that are furnished with such a defence. The armadillo might be referred to the tribe of insects, or snails, being, like them, covered with a shell; the seal and the morse might be ranked among the fishes, like them being furnished with fins, and almost constantly residing in the same element. All these, the farther they recede from the human figure, become less perfect, and may be considered as the lowest kinds of that class to which we have referred them.

But although the variety in quadrupeds is thus great, they all seem well adapted to the stations in which they are placed. There is scarcely one of them, how rudely shaped soever, that is not formed to enjoy a state of happiness fitted to its nature. All its deformities are only relative to us, but all its enjoyments are peculiarly its own. We may superficially suppose the sloth, that takes up months in climbing a single tree, or the mole, whose eyes are too small for distinct vision, are wretched and helpless creatures; but it is probable that their life, with respect to themselves, is a life of luxury; the most pleasing food is easily obtained, and, as they are abridged in one plea-

sure, it may be doubled in those which remain. Quadrupeds, and all the lower kinds of animals, have, at worst, but the torments of immediate evil to encounter, and this is but transient and accidental; man has two sources of calamity,—that which he foresees, as well as that which he feels; so that if his rewards were to be in this life alone, then, indeed, would he be of all beings the most wretched.

The heads of quadrupeds, though differing from each other, are in general adapted to their way of living. In some it is sharp, the better to fit the animal for turning up the earth in which its food lies. In some it is long, in order to give a greater room for the olfactory nerves, as in dogs, who are to hunt and find out their prey by the scent. In others it is short and thick, as in the lion, to increase the strength of the jaw, and to fit it the better for combat. In quadrupeds that feed upon grass, they are enabled to hold down their heads to the ground by a strong tendinous ligament, that runs from the head to the middle of the back. This serves to raise the head, although it has been held to the ground for several hours, without any labour, or any assistance from the muscles of the neck.

The teeth of all animals are entirely fitted to the nature of their food. Those of such as live upon flesh differ in every respect from such as live upon vegetables. In the latter, they seem entirely made for gathering and bruising their simple food, being edged before, and fitted for cutting; but broad towards the back of the jaw,

and fitted for pounding. In the carnivorous kinds they are sharp before, and fitted rather for holding than dividing. In the one the teeth serve as grindstones, in the other as weapons of defence; in both, however, the surface of those teeth which serve for grinding are unequal, the cavities and risings fitting those of the opposite, so as to tally exactly when the jaws are brought together. These inequalities better serve for comminuting the food; but they become smooth with age; and for this reason old animals take a longer time to chew their food than such as are in the vigour of life.

Their legs are not better fitted than their teeth to their respective wants or enjoyments. In some they are made for strength only, and to support a vast unwieldy frame, without much flexibility or beautiful proportion. Thus the legs of the elephant, the rhinoceros, and the sea-horse, resemble pillars: were they made smaller, they would be unfit to support the body; were they endowed with greater flexibility or swiftness, it would be useless, as they do not pursue other animals for food, and, conscious of their own superior strength, there are none that they deign to avoid. Deers, hares, and other creatures, that are to find safety only in flight, have their legs made entirely for speed; they are slender and nervous. Were it not for this advantage, every carnivorous animal would soon make them a prey, and their races would be entirely extinguished. But in the present state of nature, the means of safety are rather superior to those of

offence; and the pursuing animal must owe success only to patience, perseverance, and industry. The feet of some, that live upon fish alone, are made for swimming. The toes of those animals are joined together with membranes, being web-footed, like a goose or a duck, by which they swim with great rapidity. Those animals that lead a life of hostility, and live upon others, have their feet armed with sharp claws, which some can sheath and unsheath at will. Those, on the contrary, who lead peaceful lives, have generally hoofs, which serve some as weapons of defence, and which in all are better fitted for traversing extensive tracts of rugged country, than the claw foot of their pursuers.

The stomach is generally proportioned to the quality of the animal's food, or the ease with which it is obtained. In those that live upon flesh and such nourishing substances, it is small and glandular, affording such juices as are best adapted to digest its contents; their intestines also are short, and without fatness. On the contrary, such animals as feed entirely upon vegetables, have the stomach very large; and those who chew the cud have no less than four stomachs, all which serve as so many laboratories to prepare and turn their coarse food into proper nourishment. In Africa, where the plants afford greater nourishment than in our temperate climates, several animals that with us have four stomachs have there but two.* However, in all animals the size of the intestines

* Buffon.

is proportioned to the nature of the food; where that is furnished in large quantities, the stomach dilates to answer the increase. In domestic animals that are plentifully supplied, it is large; in the wild animals that live precariously, it is much more contracted, and the intestines are much shorter.

In this manner, all animals are fitted by nature to fill up some peculiar station. The greatest animals are made for an inoffensive life, to range the plains and the forest without injuring others; to live upon the productions of the earth, the grass of the fields, or the tender branches of trees. These, secure in their own strength, neither fly from any other quadrupeds, nor yet attack them; nature, to the greatest strength, has added the most gentle and harmless dispositions: without this, those enormous creatures would be more than a match for all the rest of the creation; for what devastation might not ensue, were the elephant, or the rhinoceros, or the buffalo, as fierce and as mischievous as the tiger or the rat? In order to oppose these large animals, and in some measure to prevent their exuberance, there is a species of the carnivorous kind, of inferior strength indeed, but of greater activity and cunning. The lion and the tiger generally watch for the larger kinds of prey, attack them at some disadvantage, and commonly jump upon them by surprise. None of the carnivorous kinds, except the dog alone, will make a voluntary attack but with the odds on their side. They are all cowards by nature, and usually catch their prey by a bound from

some lurking place, seldom attempting to invade them openly; for the larger beasts are too powerful for them, and the smaller too swift.

A lion does not willingly attack a horse, and then only when compelled by the keenest hunger. The combats between a lion and a horse are frequent enough in Italy, where they are both enclosed in a kind of amphitheatre fitted for that purpose. The lion always approaches wheeling about, while the horse presents his hinder parts to the enemy. The lion in this manner goes round and round, still narrowing his circle, till he comes to the proper distance to make his spring: just at the time the lion springs the horse lashes with both legs from behind, and in general the odds are in his favour; it more often happening that the lion is stunned and struck motionless by the blow, than that he effects his jump between the horse's shoulders. If the lion is stunned, and left sprawling, the horse escapes without attempting to improve his victory; but if the lion succeeds, he sticks to his prey, and tears the horse in pieces in a very short time.

But it is not among the larger animals of the forest alone that these hostilities are carried on; there is a minuter and a still more treacherous contest between the lower ranks of quadrupeds. The panther hunts for the sheep and the goat; the catamountain for the hare or the rabbit; and the wild cat for the squirrel or the mouse. In proportion as each carnivorous animal wants strength, it uses all the assistance of patience, assiduity, and cunning. However, the arts of

these to pursue, are not so great as the tricks of their prey to escape; so that the power of destruction in one class, is inferior to the power of safety in the other. Were this otherwise, the forest would soon be dispeopled of the feebler races of animals, and beasts of prey themselves would want at one time that subsistence which they lavishly destroyed at another.

Few wild animals seek their prey in the day-time; they are then generally deterred by their fears of man in the inhabited countries, and by the excessive heat of the sun in those extensive forests that lie towards the south, and in which they reign the undisputed tyrants. As soon as the morning, therefore, appears, the carnivorous animals retire to their dens; and the elephant, the horse, the deer, and all the hare kinds, those inoffensive tenants of the plain, make their appearance. But again, at night-fall, the state of hostility begins; the whole forest then echoes to a variety of different howlings. Nothing can be more terrible than an African landscape at the close of evening: the deep-toned roarings of the lion; the shriller yellings of the tiger; the jackall, pursuing by the scent, and barking like a dog; the hyæna, with a note peculiarly solitary and dreadful; but above all, the hissing of the various kinds of serpents, that then begin their call, and, as I am assured, make a much louder symphony than the birds in our groves in a morning.

Beasts of prey seldom devour each other; nor can any thing but the greatest degree of hunger induce them to it. What they chiefly seek after

is the deer or the goat, those harmless creatures that seem made to embellish nature. These are either pursued or surprised, and afford the most agreeable repast to their destroyers. The most usual method, with even the fiercest animals, is to hide and crouch near some path frequented by their prey, or some water where cattle come to drink, and seize them at once with a bound. The lion and the tiger leap twenty feet at a spring; and this, rather than their swiftness or strength, is what they have most to depend upon for a supply. There is scarcely one of the deer or hare kind, that is not very easily capable of escaping them by its swiftness; so that whenever any of these fall a prey, it must be owing to their own inattention.

But there is another class of the carnivorous kind that hunt by the scent, and which it is much more difficult to escape. It is remarkable, that all animals of this kind pursue in a pack, and encourage each other by their mutual cries. The jackall, the syagush, the wolf, and the dog, are of this kind; they pursue with patience rather than swiftness; their prey flies at first, and leaves them for miles behind; but they keep on with a constant steady pace, and excite each other by a general spirit of industry and emulation, till at last they share the common plunder. But it too often happens, that the larger beasts of prey, when they hear a cry of this kind begun, pursue the pack, and when they have hunted down the animal, come in and monopolize the spoil. This has given rise to the report of the jackall's being

the lion's provider; when the reality is, that the jackall hunts for itself, and the lion is an unwelcome intruder upon the fruit of his toil.

Nevertheless, with all the powers which carnivorous animals are possessed of, they generally lead a life of famine and fatigue. Their prey has such a variety of methods for escaping, that they sometimes continue without food for a fortnight together; but nature has endowed them with a degree of patience equal to the severity of their state; so that, as their subsistence is precarious, their appetites are complying. They usually seize their prey with a roar, either of seeming delight, or perhaps to terrify it from resistance. They frequently devour it, bones and all, in the most ravenous manner; and then retire to their dens, continuing inactive till the calls of hunger again excite their courage and industry. But, as all their methods of pursuit are counteracted by the arts of evasion, they often continue to range without success, supporting a state of famine for several days, nay, sometimes, for weeks together. Of their prey, some find protection in holes, in which nature has directed them to bury themselves; some find safety by swiftness; and such as are possessed of neither of these advantages, generally herd together, and endeavour to repel invasion by united force. The very sheep, which to us seem so defenceless, are by no means so in a state of nature; they are furnished with arms of defence, and a very great degree of swiftness. But they are still further assisted by their spirit of mutual defence: the females fall into the centre,

and the males, forming a ring round them, oppose their horns to the assailants. Some animals, that feed upon fruits which are to be found only at one time of the year, fill their holes with several sorts of plants, which enable them to lie concealed during the hard frosts of the winter, contented with their prison, since it affords them plenty and protection. These holes are dug with so much art, that there seems the design of an architect in the formation. There are usually two apertures, by one of which the little inhabitant can always escape when the enemy is in possession of the other. Many creatures are equally careful of avoiding their enemies, by placing a sentinel to warn them of the approach of danger. These generally perform this duty by turns; and they know how to punish such as have neglected their post, or have been unmindful of the common safety. Such are a part of the efforts that the weaker races of quadrupeds exert to avoid their invaders; and, in general, they are attended with success. The arts of instinct are most commonly found an overmatch for the invasions of instinct. Man is the only creature against whom all their little tricks cannot prevail. Wherever he has spread his dominion, scarcely any flight can save, or any retreat harbour; wherever he comes, terror seems to follow, and all society ceases among the inferior tenants of the plain; their union against him can yield them no protection, and their cunning is but weakness. In their fellow-brutes, they have an enemy whom they can oppose with an equality of advantage; they can oppose fraud or

swiftness to force, or numbers to invasion: but what can be done against such an enemy as man, who finds them out though unseen, and though remote destroys them? Wherever he comes, all the contest among the meaner ranks seems to be at an end, or is carried on only by surprise. Such as he has thought proper to protect, have calmly submitted to his protection; such as he has found convenient to destroy, carry on an unequal war, and their numbers are every day decreasing.

The wild animal is subject to few alterations; and in a state of savage nature, continues for ages the same, in size, shape, and colour. But it is otherwise when subdued, and taken under the protection of man: its external form, and even its internal structure, are altered by human assiduity; and this is one of the first and greatest causes of the variety that we see among the several quadrupeds of the same species. Man appears to have changed the very nature of domestic animals, by cultivation and care. A domestic animal is a slave that seems to have few other desires but such as man is willing to allow it: Humble, patient, resigned, and attentive, it fills up the duties of its station; ready for labour, and content with subsistence.

Almost all domestic animals seem to bear the marks of servitude strong upon them. All the varieties in their colour, all the fineness and length of their hair, together with the depending length of their ears, seem to have arisen from a long continuance of domestic slavery. What an immense variety is there to be found in the ordinary

race of dogs and horses! the principal differences of which have been effected by the industry of man, so adapting the food, the treatment, the labour, and the climate, that nature seems almost to have forgotten her original design, and the tame animal no longer bears any resemblance to its ancestors in the woods around him.

In this manner, nature is under a kind of constraint, in those animals we have taught to live in a state of servitude near us. The savage animals preserve the marks of their first formation; their colours are generally the same; a rough dusky brown, or a tawny, seem almost their only varieties. But it is otherwise in the tame; their colours are various, and their forms different from each other. The nature of the climate, indeed, operates upon all, but more particularly on these. That nourishment which is prepared by the hand of man, not adapted to their appetites, but to suit his own convenience, that climate the rigours of which he can soften, and that employment to which they are sometimes assigned, produce a number of distinctions that are not to be found among the savage animals. These at first were accidental, but in time became hereditary; and a new race of artificial monsters are propagated, rather to answer the purposes of human pleasure, than their own convenience. In short, their very appetites may be changed; and those that feed only upon grass, may be rendered carnivorous. I have seen a sheep that would eat flesh, and a horse that was fond of oysters.

But not their appetites, or their figure alone, but their very dispositions, and their natural sagacity, are altered by the vicinity of man. In those countries where men have seldom intruded, some animals have been found established in a kind of civil state of society. Remote from the tyranny of man, they seem to have a spirit of mutual benevolence and mutual friendship. The beavers, in these distant solitudes, are known to build like architects, and rule like citizens. The habitations that these have been seen to erect, exceed the houses of the human inhabitants of the same country, both in neatness and convenience. But as soon as man intrudes upon their society, they seem impressed with the terrors of their inferior situation, their spirit of society ceases, the bond is dissolved, and every animal looks for safety in solitude, and there tries all its little industry to shift only for itself.

Next to human influence, the climate seems to have the strongest effects both upon the nature and form of quadrupeds. As in man we have seen some alterations produced by the variety of his situation, so in the lower ranks, that are more subject to variation, the influence of climate is more readily perceived. As these are more nearly attached to the earth, and in a manner connected to the soil; as they have none of the arts of shielding off the inclemency of the weather, or softening the rigours of the sun, they are consequently more changed by its variations. In general it may be remarked, that the colder the country, the larger and the warmer is the fur of each ani-

mal; it being wisely provided by nature, that the inhabitant should be adapted to the rigours of its situation. Thus the fox and wolf, which in temperate climates have but short hair, have a fine long fur in the frozen regions near the pole. On the contrary, those dogs which with us have long hair, when carried to Guinea, or Angola, in a short time cast their thick covering, and assume a lighter dress, and one more adapted to the warmth of the country. The beaver and the ermine, which are found in the greatest plenty in the cold regions, are remarkable for the warmth and delicacy of their furs; while the elephant and the rhinoceros, that are natives of the Line, have scarcely any hair. Not but that human industry can, in some measure, co-operate with, or repress the effects of climate in this particular. It is well known what alterations are produced by proper care, in the sheep's fleece, in different parts of our own country; and the same industry is pursued with a like success in Syria, where many of their animals are clothed with a long and beautiful hair, which they take care to improve, as they work it into that stuff called camblet, so well known in different parts of Europe.

The disposition of the animal seems also not less marked by the climate than the figure. The same causes that seem to have rendered the human inhabitants of the rigorous climates savage and ignorant, have also operated upon their animals. Both at the Line and the Pole the wild quadrupeds are fierce and untameable. In these latitudes, their savage dispositions having not been

quelled by any efforts from man, and being still farther stimulated by the severity of the weather, they continue fierce and untractable. Most of the attempts which have hitherto been made to tame the wild beasts brought home from the Pole or the Equator, have proved ineffectual. They are gentle and harmless enough while young; but as they grow up, they acquire their natural ferocity, and snap at the hand that feeds them. It may indeed in general be asserted, that in all countries where the men are most barbarous, the beasts are most fierce and cruel: and this is but a natural consequence of the struggle between man and the more savage animals of the forest; for in proportion as he is weak and timid, they must be bold and intrusive; in proportion as his dominion is but feebly supported, their rapacity must be more obnoxious. In the extensive countries, therefore, lying round the Pole, or beneath the Line, the quadrupeds are fierce and formidable. Africa has ever been remarked for the brutality of its men, and the fierceness of its animals: its lions and its leopards are not less terrible than its crocodiles and its serpents; their dispositions seem entirely marked with the rigours of the climate; and being bred in an extreme of heat, they show a peculiar ferocity, that neither the force of man can conquer, nor his arts allay. However, it is happy for the wretched inhabitants of those climates, that its most formidable animals are all solitary ones; that they have not learnt the art of uniting to oppress mankind, but each,

depending on its own strength, invades without any assistant.

The food also is another cause in the variety which we find among quadrupeds of the same kind. Thus the beasts which feed in the valley are generally larger than those which glean a scanty subsistence on the mountain. Such as live in the warm climates, where the plants are much larger and more succulent than with us, are equally remarkable for their bulk. The ox fed in the plains of Indostan is much larger than that which is more hardily maintained on the side of the Alps. The deserts of Africa, where the plants are extremely nourishing, produce the largest and fiercest animals; and perhaps, for a contrary reason, America is found not to produce such large animals as are seen in the ancient continent. But whatever be the reason, the fact is certain, that while America exceeds us in the size of its reptiles of all kinds, it is far inferior in its quadruped productions. Thus, for instance, the largest animal of that country is the tapir, which can by no means be compared to the elephant of Africa. Its beasts of prey also are divested of that strength and courage which is so dangerous in this part of the world. The American lion, tiger, and leopard, if such diminutive creatures deserve these names, are neither so fierce nor so valiant as those of Africa and Asia. The tiger of Bengal has been seen to measure twelve feet in length, without including the tail, whereas the American tiger seldom exceeds three. This difference obtains still more in the other animals of that country,

so that some have been of opinion,* that all quadrupeds in Southern America are of a different species from those most resembling them in the old world, and that there are none which are common to both but such as have entered America by the north; and which, being able to bear the rigours of the frozen pole, have travelled from the ancient continent by that passage into the new. Thus the bear, the wolf, the elk, the stag, the fox, and the beaver, are known to the inhabitant as well of North America as of Russia; while most of the various kinds to the southward, in both continents, bear no resemblance to each other. Upon the whole, such as peculiarly belong to the new continent are without any marks of the quadruped perfection. They are almost wholly destitute of the power of defence; they have neither formidable teeth, horns, or tail; their figure is awkward, and their limbs ill proportioned. Some among them, such as the ant-bear and the sloth, appear so miserably formed as scarcely to have the power of moving and eating. They, seemingly, drag out a miserable and languid existence in the most desert solitude; and would quickly have been destroyed in a country where there were inhabitants, or powerful beasts to oppose them.

But if the quadrupeds of the new continent be less, they are found in much greater abundance; for it is a rule that obtains through nature, that the smallest animals multiply the fastest. The

* Buffon.

goat, imported from Europe to South America, soon begins to degenerate; but as it grows less it becomes more prolific, and instead of one kid at a time, or two at the most, it generally produces five, and sometimes more. What there is in the food, or the climate, that produces this change, we have not been able to learn; we might be apt to ascribe it to the heat, but that on the African coast, where it is still hotter, this rule does not obtain; for the goat, instead of degenerating there, seems rather to improve.

However, the rule is general among all quadrupeds, that those which are large and formidable produce but few at a time; while such as are mean and contemptible are extremely prolific. The lion or tiger have seldom above two cubs at a litter; while the cat, that is of a similar nature, is usually seen to have five or six. In this manner, the lower tribes become extremely numerous; and, but for this surprising fecundity, from their natural weakness, they would quickly be extirpated. The breed of mice, for instance, would have long since been blotted from the earth, were the mouse as slow in production as the elephant. But it has been wisely provided, that such animals as can make but little resistance, should at least have a means of repairing the destruction which they must often suffer, by their quick reproduction; that they should increase even among enemies, and multiply under the hand of the destroyer. On the other hand, it has as wisely been ordered by Providence, that the larger kinds should produce but slowly;

otherwise, as they require proportional supplies from nature, they would quickly consume their own store, and, of consequence, many of them would soon perish through want; so that life would thus be given without the necessary means of subsistence. In a word, Providence has most wisely balanced the strength of the great against the weakness of the little. Since it was necessary that some should be great and others mean, since it was expedient that some should live upon others, it has assisted the weakness of one by granting it fruitfulness, and diminished the number of the other by infecundity.

In consequence of this provision, the larger creatures, which bring forth few at a time, seldom begin to generate till they have nearly acquired their full growth. On the contrary, those which bring many, reproduce before they have arrived at half their natural size. Thus the horse and the bull are nearly at their best before they begin to breed; the hog and the rabbit scarce leave the teat before they become parents in turn. Almost all animals likewise continue the time of their pregnancy in proportion to their size. The mare continues eleven months with foal, the cow nine, the wolf five, and the bitch nine weeks. In all, the intermediate litters are the most fruitful; the first and the last generally producing the fewest in number, and the worst of the kind.

Whatever be the natural disposition of animals at other times, they all acquire new courage when they consider themselves as defending their young. No terrors can then drive them from the post of

duty; the mildest begin to exert their little force, and resist the most formidable enemy. Where resistance is hopeless, they then incur every danger in order to rescue their young by flight, and retard their own expedition by providing for their little ones. When the female opossum, an animal of America, is pursued, she instantly takes her young into a false belly, with which nature has supplied her, and carries them off, or dies in the endeavour. I have been lately assured of a she-fox, which, when hunted, took her cub in her mouth, and ran for several miles without quitting it, until at last she was forced to leave it behind, upon the approach of a mastiff, as she ran through a farmer's yard. But if at this period the mildest animals acquire new fierceness, how formidable must those be that subsist by rapine? At such times no obstacles can stop their ravage, nor no threats can terrify; the lioness then seems more hardy than even the lion himself. She attacks men and beasts indiscriminately, and carries all she can overcome reeking to her cubs, whom she thus early accustoms to slaughter. Milk in the carnivorous animals is much more sparing than in others; and it may be for this reason that all such carry home their prey alive, that in feeding their young its blood may supply the deficiencies of nature, and serve instead of that milk with which they are so sparingly supplied.

Nature, that has thus given them courage to defend their young, has given them instinct to choose the proper times of copulation, so as to bring forth when the provision suited to each

kind is to be found in the greatest plenty. The wolf, for instance, couples in December, so that the time of pregnancy continuing five months, it may have its young in April. The mare, who goes eleven months, admits the horse in summer, in order to foal about the beginning of May. On the contrary, those animals which lay up provisions for the winter, such as the beaver and the marmot, couple in the latter end of autumn, so as to have their young about January, against which season they have provided a very comfortable store. These seasons for coupling, however, among some of the domestic kinds, are generally in consequence of the quantity of provisions with which they are at any time supplied. Thus we may, by feeding any of these animals, and keeping off the rigour of the climate, make them breed whenever we please. In this manner those contrive who produce lambs all the year round.

The choice of situation in bringing forth is also very remarkable. In most of the rapacious kinds, the female takes the utmost precautions to hide the place of her retreat from the male; who otherwise, when pressed by hunger, would be apt to devour her cubs. She seldom, therefore, strays far from the den, and never approaches it while he is in view, nor visits him again till her young are capable of providing for themselves. Such animals as are of tender constitutions take the utmost care to provide a place of warmth as well as safety for their young; the rapacious kinds bring forth in the thickest woods; those that chew the cud, with the various tribes of the

vermin kind, choose some hiding place in the neighbourhood of man. Some dig holes in the ground; some choose the hollow of a tree; and all the amphibious kinds bring up their young near the water, and accustom them betimes to their proper element.

Thus nature seems kindly careful for the protection of the meanest of her creatures: but there is one class of quadrupeds that seems entirely left to chance, that no parent stands forth to protect, nor no instructor leads, to teach the arts of subsistence. These are the quadrupeds that are brought forth from the egg, such as the lizard, the tortoise, and the crocodile. The fecundity of all other animals compared with these is sterility itself. These bring forth above two hundred at a time; but as the offspring is more numerous, the parental care is less exerted. Thus the numerous brood of eggs are, without farther solicitude, buried in the warm sands of the shore, and the heat of the sun alone is left to bring them to perfection. To this perfection they arrive almost as soon as disengaged from the shell. Most of them, without any other guide than instinct, immediately make to the water. In their passage thither, they have numberless enemies to fear. The birds of prey that haunt the shore, the beasts that accidentally come that way, and even the animals that give them birth, are known, with a strange rapacity, to thin their numbers as well as the rest.

But it is kindly ordered by Providence that these animals, which are mostly noxious, should thus have many destroyers: were it not for this,

by their extreme fecundity they would soon overrun the earth, and cumber all our plains with deformity.

CHAPTER XI.

ANIMALS OF THE HORSE KIND.*

ANIMALS of the horse kind deserve a place next to man, in a history of nature. Their activity, their strength, their usefulness, and their beauty, all contribute to render them the principal objects

* As it may happen, that, in a description where it is the aim rather to insert what is not usually known, than all that is known, some of the more obvious particulars may be omitted; I will take leave to subjoin in the notes the characteristic marks of each animal,* as given us by Linnæus. "The horse, with six cutting teeth before, and single-hoofed, a native of Europe and the East, (but I rather believe of Africa), a generous, proud, and strong animal, fit either for the draught, the course, or the road: he is delighted with woods, he takes care of his hinder parts, defends himself from the flies with his tail, scratches his fellow, defends its young, calls by neighing, sleeps after night-fall, fights by kicking, and by biting also, rolls on the ground when he sweats, eats the grass closer than the ox, distributes the seed by dunging, wants a gall-bladder, never vomits; the foal is produced with the feet stretched out; he is injured by being struck on the ear, upon the stiffle, by being caught by the nose in barnacles, by having his teeth rubbed with tallow, by the herb padus, by the herb phalandria, by the cruculio, by the conops. His diseases are different in different countries: a consumption of the ethmoid bones of the nose, called the *glanders*, is with us the most infectious and fatal. He eats hemlock without injury. The mare goes with foal two hundred and ninety days. The placenta is not fixed. He acquires not the canine teeth till the age of five years."

* [Instead, however, of giving these characteristic marks in the notes, the Author has in general incorporated them with the text. Where any part of them appears to have been omitted, the deficiency has been supplied from the best authorities.]

of our curiosity and care, a race of creatures in whose welfare we are interested next to our own.

Of all the quadruped animals, the horse seems the most beautiful: the noble largeness of his form, the glossy smoothness of his skin, the graceful ease of his motions, and the exact symmetry of his shape, have taught us to regard him as the first, and as the most perfectly formed; and yet, what is extraordinary enough, if we examine him internally, his structure will be found the most different from that of man of all other quadrupeds whatsoever. As the ape approaches us the nearest in internal conformation, so the horse is the most remote; *—a striking proof that there may be oppositions of beauty, and that all grace is not to be referred to one standard.

To have an idea of this noble animal in his native simplicity, we are not to look for him in the pastures, or the stables, to which he has been consigned by man; but in those wild and extensive plains where he has been originally produced, where he ranges without controul, and riots in all the variety of luxurious nature. In this state of happy independence, he disdains the assistance of man, which only tends to servitude. In those boundless tracts, whether of Africa or New Spain, where he runs at liberty, he seems no way incommoded with the inconveniencies to which he is subject in Europe. The continual verdure of the fields supplies his wants; and the climate, that never knows a winter, suits his constitution,

* Histoire Naturelle, Daubenton, vol. vii. p. 374.

which naturally seems adapted to heat. His enemies of the forest are but few, for none but the greater kinds will venture to attack him; any one of these he is singly able to overcome, while at the same time he is content to find safety in society; for the wild horses of those countries always herd together.

In these countries, therefore, the horses are often seen feeding in droves of five or six hundred. As they do not carry on war against any other race of animals, they are satisfied to remain entirely upon the defensive. The pastures on which they live satisfy all their appetites, and all other precautions are purely for their security in case of a surprise. As they are never attacked but at a disadvantage, whenever they sleep in the forest, they have always one among their number that stands as sentinel, to give notice of any approaching danger; and this office they take by turns.* If a man approaches them while they are feeding by day, their sentinel walks up boldly near him, as if to examine his strength, or to intimidate him from proceeding; but if the man approaches within pistol-shot, the sentinel then thinks it high time to alarm his fellows: this he does by a loud kind of snorting, upon which they all take the signal, and fly off with the speed of the wind; their faithful sentinel bringing up the rear.†

It is not easy to say from what country the horse came originally. It should seem that the

* Dictionnaire Universel des Animaux, p. 19.

† Labat, tome vii.

colder climates do not agree with his constitution; for although he is found almost in them all, yet his form is altered there, and he is found at once diminutive and ill-shaped. We have the testimony of the ancients that there were wild horses once in Europe; at present, however, they are totally brought under subjection; and even those which are found in America are of a Spanish breed, which being sent thither upon its first discovery, have since become wild, and have spread over all the south of that vast continent, almost to the Straits of Magellan. These, in general, are a small breed, of about fourteen hands high. They have thick jaws and clumsy joints; their ears and neck also are long; they are easily tamed; for the horse, by nature, is a gentle complying creature, and resists rather from fear than obstinacy. They are caught by a kind of noose, and then held fast by the legs, and tied to a tree, where they are left for two days, without food or drink. By that time they begin to grow manageable; and in some weeks they become as tame as if they had never been in a state of wildness. If by any accident they are once more set at liberty, they never become wild again, but know their masters, and come to their call. Some of the buccaneers have often been agreeably surprised, after a long absence, to see their faithful horses once more present themselves with their usual assiduity, and come up, with a fond submission, to receive the rein.

These American horses, however, cannot properly be ranked among the wild races, since they

were originally bred from such as were tame. It is not in the new, but the old world, that we are to look for this animal in a true state of nature; in the extensive deserts of Africa, in Arabia, and those wide-spread countries that separate Tartary from the more southern nations. Vast droves of these animals are seen wild among the Tartars: they are of a small breed, extremely swift, and very readily evade their pursuers. As they go together, they will not admit of any strange animals among them, though even of their own kind. Whenever they find a tame horse attempting to associate with them, they instantly gather round him, and soon oblige him to seek safety by flight. There are vast numbers also of wild horses to the north of China, but they are of a weak timid breed, small of stature, and useless in war.

At the Cape of Good Hope there are numbers of horses in a state of nature, but small, vicious, and untameable. They are found wild also in several other parts of Africa; but the wretched inhabitants of that country either want the art to tame them, or seem ignorant of their uses. It is common with the Negroes, who are carried over from thence to America, when they first see a horse to testify both terror and surprise. These poor men seem not to have any knowledge of such a creature; and though the horse is probably a native of their own country, they have let all the rest of mankind enjoy the benefit of his services, without turning them to any advantage at home. In some parts of Africa, therefore, where the horse runs wild, the natives seem to consider

him rather in the light of a dainty for food, than a useful creature, capable of assisting them either in war or labour: riding seems a refinement that the natives of Angola or Caffraria have not as yet been able to attain to; and whenever they catch a horse, it is only with an intent to eat him.

But of all countries in the world where the horse runs wild, Arabia produces the most beautiful breed, the most generous, swift, and persevering. They are found, though not in great numbers, in the deserts of that country; and the natives use every stratagem to take them. Although they are active and beautiful, yet they are not so large as those that are bred up tame; they are of a brown colour, their mane and tail very short, and the hair black and tufted.* Their swiftness is incredible; the attempt to pursue them in the usual manner of the chase with dogs, would be entirely fruitless. Such is the rapidity of their flight, that they are instantly out of view, and the dogs themselves give up the vain pursuit. The only method, therefore, of taking them is by traps hidden in the sand, which entangling their feet, the hunter at length comes up, and either kills them or carries them home alive. If the horse be young, he is considered among the Arabians as a very great delicacy, and they feast upon him while any part is found remaining; but if, from his shape or vigour, he promises to be serviceable in his more noble capacity, they take the usual methods of taming him by fatigue and

* Marm. Descript. de l'Afrique, lib. i. p. 51.

hunger, and he soon becomes an useful domestic animal.

The usual manner of trying their swiftness is by hunting the ostrich: the horse is the only animal whose speed is comparable to that of this creature, which is found in the sandy plains with which those countries abound. The instant the ostrich perceives itself aimed at, it makes to the mountains, while the horseman pursues with all the swiftness possible, and endeavours to cut off its retreat. The chase then continues along the plain, while the ostrich makes use of both legs and wings to assist its motion. However, a horse of the first speed is able to outrun it; so that the poor animal is then obliged to have recourse to art to elude the hunter, by frequently turning: at length, finding all escape hopeless, it hides its head wherever it can, and suffers itself tamely to be taken. If the horse, in a trial of this kind, shows great speed, and is not readily tired, his price becomes proportionably great, and there are some horses valued at a thousand ducats.

But the horses thus caught, or trained in this manner, are at present but very few; the value of Arabian horses over all the world has in a great measure thinned the deserts of the wild breed, and there are very few to be found in those countries except such as are tame. The Arabians, as we are told by historians, first began the management of horses in the time of Sheque Ismael. Before that, they wandered wild along the face of the country, neglected and useless; but the natives then first began to tame their fierceness, and

to improve their beauty; so that at present they possess a race of the most beautiful horses in the world, with which they drive a trade, and furnish the stables of princes at immense prices.

There is scarcely an Arabian, how poor soever, but is provided with his horse.* They in general make use of mares in their ordinary excursions, experience having taught them that they support fatigue, thirst, and hunger, better than the horses are found to do. They are also less vicious, of a gentler nature, and are not so apt to neigh. They are more harmless also among themselves, not so apt to kick or hurt each other, but remain whole days together without the least mischief. The Turks, on the contrary, are not fond of mares; and the Arabians sell them such horses as they do not choose to keep for stallions at home. They preserve the pedigree of their horses with great care, and for several ages back. They know their alliances, and all their genealogy; they distinguish the races by different names, and divide them into three classes. The first is that of the nobles, the ancient breed, and unadulterated on either side; the second is that of the horses of the ancient race, but adulterated; and the third is that of the common and inferior kind. The last they sell at a low price; but those of the first class, and even of the second, amongst which are found horses of equal value to the former, are sold extremely dear. They know, by long experience, the race of a horse by his appearance;

* Buffon.

they can tell the name, the surname, the colour, and the marks properly belonging to each. When they are not possessed of stallions of the noble race themselves for their mares, they borrow from their neighbours, paying a proper price as with us, and receive a written attestation of the whole. In this attestation is contained the name of the horse and the mare, and their respective genealogies. When the mare has produced her foal, new witnesses are called, and a new attestation signed, in which are described the marks of the foal, and the day noted when it was brought forth. These attestations increase the value of the horse; and they are given to the person who buys him. The most ordinary mare of this race sells for five hundred crowns; there are many that sell for a thousand; and some of the very finest kinds for fourteen or fifteen hundred pounds. As the Arabians have no other house but a tent to live in, this also serves them for a stable; so that the mare, the foal, the husband, the wife, and the children, lie all together indiscriminately: the little children are often seen upon the body or the neck of the mare, while these continue inoffensive and harmless, permitting them thus to play with and caress them without any injury. The Arabians never beat their horses; they treat them gently; they speak to them, and seem to hold a discourse; they use them as friends; they never attempt to increase their speed by the whip, nor spur them, but in cases of necessity. However, when this happens, they set off with amazing swiftness; they leap over obstacles with as much agility as a buck;

and if the rider happens to fall, they are so manageable that they stand still in the midst of their most rapid career. The Arabian horses are of a middle size, easy in their motions, and rather inclined to leanness than fat. They are regularly dressed every morning and evening, and with such care that the smallest roughness is not left upon their skins. They wash the legs, the mane, and the tail, which they never cut, and which they seldom comb, lest they should thin the hair. They give them nothing to eat during the day; they only give them to drink once or twice; and at sunset they hang a bag to their heads, in which there is about half a bushel of clean barley. They continue eating the whole night, and the bag is again taken away the next morning. They are turned out to pasture in the beginning of March, when the grass is pretty high, and at which time the mares are given to the stallion. When the spring is past, they take them again from pasture, and they get neither grass nor hay during the rest of the year; barley is their only food, except now and then a little straw. The mane of the foal is always clipped when about a year or eighteen months old, in order to make it stronger and thicker. They begin to break them at two years old, or two years and a half at farthest: they never saddle or bridle them till at that age, and then they are always kept ready saddled at the door of the tent from morning till sunset, in order to be prepared against any surprise. They at present seem sensible of the great advantage their horses are to the country: there is a law,

therefore, that prohibits the exportation of the mares; and such stallions as are brought into England are generally purchased on the eastern shores of Africa, and come round to us by the Cape of Good Hope. They are in general less in stature than our own, being not above fourteen, or fourteen hands and a half high; their motions are much more graceful and swifter than of our own horses; but nevertheless their speed is far from being equal: they run higher from the ground; their stroke is not so long and close; and they are far inferior in bottom. Still, however, they must be considered as the first and finest breed in the world, and that from which all others have derived their principal qualifications. It is even probable that Arabia is the original country of horses; since there, instead of crossing the breed, they take every precaution to keep it entire. In other countries they must continually change the races, or their horses would soon degenerate; but there the same blood has passed down through a long succession, without any diminution either of force or beauty.

The race of Arabian horses has spread itself into Barbary among the Moors, and has even extended across that extensive continent to the western shores of Africa. Among the Negroes of Gambia and Senegal, the chiefs of the country are possessed of horses, which, though little, are very beautiful, and extremely manageable. Instead of barley, they are fed in those countries with maize, bruised and reduced into meal, and mixed up with milk, when they design to fatten

them. These are considered as next to the Arabian horses both for swiftness and beauty, but they are rather still smaller than the former. The Italians have a peculiar sport, in which horses of this breed run against each other. They have no riders, but saddles so formed as to flap against the horses' sides as they move, and thus to spur them forward. They are set to run in a kind of railed walk, about a mile long, out of which they never attempt to escape; but when they once set forward, they never stop, although the walk from one end to the other is covered with a crowd of spectators, which opens and gives way as the horses approach. Our horses would scarcely in this manner face a crowd, and continue their speed without a rider, through the midst of a multitude; and indeed it is a little surprising how, in such a place, the horses find their own way. However, what our English horses may want in sagacity, they make up by their swiftness; and it has been found upon computation, that their speed is nearly one-fourth greater, even carrying a rider, than that of the swiftest Barb without one.

The Arabian breed has been diffused into Egypt as well as Barbary, and into Persia also; where, as we are told by Marcus Paulus, there are studs of ten thousand white mares all together, very fleet, and with the hoof so hard that shoeing is unnecessary. In these countries, they in general give their horses the same treatment that they give in Arabia, except that they litter them upon a bed of their own dung, dried in the sun, and then re-

duced to powder. When this, which is spread under the horse about five inches thick, is moistened, they dry it again, and spread it as before. The horses of these countries a good deal resemble each other. They are usually of a slender make; their legs fine, bony, and far apart; a thin mane; a fine crest; a beautiful head; the ear small and well pointed; the shoulder thin; the side rounded, without any unsightly prominence; the croup is a little of the longest, and the tail is generally set high. The race of horses, however, is much degenerated in Numidia; the natives having been discouraged from keeping the breed up by the Turks, who seize upon all the good horses, without paying the owners the smallest gratuity for their care in bringing them up. The Tingitanians and Egyptians have now, therefore, the fame of rearing the finest horses, both for size and beauty. The smallest of these last are usually sixteen hands high; and all of them shaped, as they express it, with the elegance of an antelope.

Next to the Barb, travellers generally rank the Spanish genette. These horses, like the former, are little, but extremely swift and beautiful. The head is something of the largest; the mane thick; the ears long, but well pointed; the eyes filled with fire; the shoulder thickish, and the breast full and large. The croup round and large; the legs beautiful, and without hair; the pastern a little of the longest, as in the Barb, and the hoof rather too high. Nevertheless, they move with great ease, and carry themselves extremely well. Their most usual colour is black, or a dark bay.

They seldom or never have white legs, or white snip. The Spaniards, who have a groundless aversion to these marks, never breed from such as have them. They are all branded on the buttock with the owner's name; and those of the province of Andalusia pass for the best. These are said to possess courage, obedience, grace, and spirit, in a greater degree than even the Barb; and, for this reason, they have been preferred as war horses to those of any other country.

The Italian horses were once more beautiful than they are at present; for they have greatly neglected the breed. Nevertheless, there are still found some beautiful horses among them, particularly among the Neapolitans, who chiefly use them for the draught. In general they have large heads and thick necks. They are also restive, and consequently unmanageable. These faults, however, are recompensed by the largeness of their size, by their spirit, and the beauty of their motion. They are excellent for show, and have a peculiar aptitude to prance.

The Danish horses are of such an excellent size, and so strong a make, that they are preferred to all others for the draught. There are some of them perfectly well shaped; but this is but seldom seen, for in general they are found to have a thick neck, heavy shoulders, long and hollow back, and a narrow croup: however, they all move well, and are found excellent both for parade and war. They are of all colours, and often of whimsical ones, some being streaked like the tiger, or mottled like the leopard.

The German horses are originally from Arabian and Barbary stocks; nevertheless, they appear to be small and ill-shaped; it is said also, that they are weak and washy, with tender hoofs. The Hungarian horses, on the other hand, are excellent for the draught, as well as the saddle. The hussars, who use them in war, usually slit their nostrils; which is done, as it is said, to prevent their neighing, but, perhaps, without any real foundation.

The Dutch breed is good for the draught, and is generally used for that purpose over Europe: the best come from the province of Friezland. The Flanders horses are much inferior to the former; they have most commonly large heads, flat feet, and swollen legs, which are an essential blemish in horses of this kind.

The French horses are of various kinds; but they have few that are good. The best horses of that country come from Limosin: they have a strong resemblance to the Barb, and, like them, are excellent for the chase; but they are slow in coming to perfection; they are to be carefully treated while young, and must not be backed till they are eight years old. Normandy furnishes the next best; which, though not so good for the chase, are yet better for war. In general, the French horses have the fault of being heavy-shouldered, which is opposite to the fault of the Barb, which is too thin in the shoulder, and is consequently apt to be shoulder-slipt.

Having mentioned the horses most usually known in Europe, we pass on to those of more

distant countries, of whose horses we can only judge by report. We mentioned the wild horses of America. Such as are tame, if we may credit the latest reports,* are admirable. Great numbers of these are bred up to the chase, and are chiefly kept for this purpose, particularly at Quito. The hunters, as Ulloa informs us, are divided into two classes; one part on foot, the other on horseback: the business of the footmen is to rouse the deer, and that of the horsemen to hunt it down. They all, at break of day, repair to the place appointed, which is generally on the summit of a hill, with every man his greyhound. The horsemen place themselves on the highest peaks, whilst those on foot range the precipices, making a hideous noise, in order to start the deer. Thus the company extend themselves three or four leagues, or more, according to their numbers. On starting any game, the horse which first perceives it sets off, and the rider, being unable to guide or stop him, pursues the chase, sometimes down such a steep slope, that a man on foot with the greatest care could hardly keep his legs: from thence he flies up a dangerous ascent, or along the side of a mountain, so that a person not used to this exercise would think it much safer to throw himself out of the saddle, than commit his life to the precipitate ardour of his horse. The other horses which join in the chase do not wait for the riders to animate them; they set forward immediately upon seeing another at full speed; and it becomes

* Ulloa's Voyage, vol. i. p. 464.

prudent in the rider to give them their way, and at the same time to let them feel the spur, to carry him over the precipices. These horses are backed and exercised to this method of hunting; and their usual pace is trotting.

There are said to be very good horses in the islands of the Archipelago. Those of Crete were in great reputation among the ancients for their swiftness and force; however, at present they are but little used, even in the country itself, because of the unevenness of the ground, which is there very rocky and mountainous. The original horses of Morocco are much smaller than the Arabian breed; however, they are very swift and vigorous. In Turkey there are to be found horses of almost all races, Arabians, Tartars, Hungarians, and those natural to the place. The latter are very beautiful and elegant; they have a great deal of fire, swiftness, and management; but they are not able to support fatigue: they eat little; they are easily heated; and they have skins so sensible, that they can scarcely bear the rubbing of the stirrup. The Persian horses are, in general, the most beautiful and most valuable of all the East. The pastures in the plains of Media, Persepolis, Ardebil, and Derbent, are excellent for the purpose of rearing them; and there were bred in those places vast numbers, by order of the government of Persia, while that country was under any government. Pietro della Valle prefers the horses of Persia to those of Italy; and informs us, that they are in general of a middle size; and although some are found even of the

smallest stature, yet that does not impair their beauty or their strength: yet, in some places, they are found of a very good size, and as large as the English saddle-horses are generally found to be: They have all a thin head, a fine crest, a narrow breast, small ears well placed, the legs fine, the hoof hard, and the croup beautiful; they are docile, spirited, nimble, hardy, courageous, and capable of supporting a very great fatigue; they run very swiftly, without being easily fatigued; they are strong and easily fed, being only supplied with barley and chopped straw; they are put to grass only for six weeks in the spring; they have always the tail at full length, and there is no such thing as geldings among the number; they are defended from the air, as in England, by body-clothes; they are attended with the most punctual exactness; and they are rid generally in a snaffle, without spurs. Great numbers of these are every year transported into Turkey, but chiefly into the East Indies; however, after all, travellers agree that they are not to be compared to the Arabian horses, either for courage, force, or beauty; and that the latter are eagerly sought, even in Persia.

The horses of India are of a very indifferent kind, being weak and washy. Those which are used by the grandees of the country come from Persia and Arabia; they are fed with a small quantity of hay during the day, and at night they have boiled peas mixed with sugar and butter, instead of oats or barley: this nourishment supports them, and gives them strength, otherwise

they would soon sink and degenerate. Those naturally belonging to the country are very small and vicious. Some are so very little, that Taverner reports, that the young Mogul prince, at the age of seven or eight, rode one of those little horses that was not much larger than a greyhound; and it is not long since one of these was brought over into this country, as a present to the Queen, that measures no more than nine hands high, and is not much larger than a common mastiff. It would seem that climates excessively hot are unfavourable to this animal. In this manner the horses of the Gold Coast, and of Guinea, are extremely little, but very manageable. It is a common exercise with the grandees of that country, who are excellent horsemen, to dart out their lances before them upon full gallop, and to catch them again before they come to the ground. They have a sport also on horseback that requires great dexterity in the rider, and a great share of activity in the horse: they strike off a ball, with a battledore, while they are upon a full gallop, and pursuing it, strike it again before it comes to the ground; and this they continue for a mile together, striking sometimes to the right, and sometimes to the left, with amazing speed and agility.

The horses of China are as indifferent as those of India: they are weak, little, ill-shaped, and cowardly. Those of Corea are not above three feet high: almost all the breed there are made geldings, and are so timorous, that they can be rendered no way serviceable in war; so that it

may be said, that the Tartar horses were properly the conquerors of China. These, indeed, are very serviceable in war; and although but of a middle size, yet they are surprisingly patient, vigorous, swift, and bold: their hoofs are extremely hard, though rather too narrow; their heads are fine, but rather too little; the neck is long and stiff; the legs of the longest; and yet, with all these faults, they are found to be an excellent breed. The Tartars live with their horses pretty much in the same manner as the Arabians do; they begin to back them at the age of seven or eight months, placing their children upon them, who manage them even at that early age. By these means they break them, by little and little, till at last, about the age of six or seven years, they are capable of enduring amazing hardships. Thus they have been known to march two or three days without once stopping; to continue five or six without eating any thing except a handful of grass at every eight hours; and, besides, to remain without drinking for four-and-twenty hours. These horses, which are so vigorous in their own country, lose all their strength when they are brought into China or the Indies; but they thrive pretty well in Persia and Turkey. The race of little Tartars towards the north have also a breed of little horses, which they set such a value upon, that it is forbidden to sell them to strangers: these horses have the very same qualities with those of the larger kind, which they probably derive from a similar treatment. There are also very fine horses in Circassia and Mingrelia.

There are some greatly esteemed in the Ukraine, in Walachia, Poland, and Sweden; but we have no particular accounts of their excellencies or defects.

If we consult the ancients on the nature and qualities of the horses of different countries, we learn, that the Grecian horses, and particularly those of Thessaly, had the reputation of being excellent for war; that those of Achaia were the largest that were known; that the most beautiful came from Egypt, which bred great numbers; that the horses of Ethiopia were not in esteem, owing to the heat of the country; that Arabia and Africa furnished very beautiful horses, and very fit for the course; that those of Italy, and particularly of Apulia, were very good; that in Sicily, Cappadocia, Syria, Armenia, Media, and Persia, there were excellent horses, equally esteemed for their speed and vigour; that those of Sardinia and Corsica, though small, were spirited and courageous; that those of Spain resembled the Parthian horses, in being very well adapted for war; that in Walachia and Transylvania there were horses with bushy tails, and manes hanging down to the ground, which, nevertheless, were extremely swift and active; that the Danish horses were good leapers; those of Scandinavia, though little, were well-shaped, and possessed of great agility; that the Flanders breed was strong; that the Gaulish horses were good for carrying burdens; that the German breeds were so bad, so diminutive, and ill-shaped, that no use could be made of them; that the Swiss

and Hungarian horses were good; and lastly, that those of India were very diminutive and feeble.

Such are the different accounts we have of the various races of horses in different parts of the world. I have hitherto omitted making mention of one particular breed, more excellent than any that either the ancients or moderns have produced; and that is our own. It is not without great assiduity, and unceasing application, that the English horses are now become superior to those of any other part of the world, for size, strength, swiftness, and beauty. It was not without great attention and repeated trials of all the best horses in different parts of the world, that we have been thus successful in improving the breed of this animal; so that the English horses are now capable of performing what no others could ever attain to. By a judicious mixture of the several kinds, by the happy difference of our soils, and by our superior skill in management, we have brought this animal to its highest perfection. An English horse, therefore, is now known to excel the Arabian in size and swiftness; to be more durable than the Barb, and more hardy than the Persian. An ordinary racer is known to go at the rate of a mile in two minutes; and we had one instance, in the admirable Childers, of still greater rapidity. He has been frequently known to move above eighty-two feet and a half in a second, or almost a mile in a minute: he has run also round the course of Newmarket, which is very little less than four

miles, in six minutes and forty seconds. But what is surprising, few horses have been since found that ever could equal him; and those of his breed have been remarkably deficient.

However this be, no horses can any way equal our own, either in point of swiftness or strength; and these are the qualifications our horsemen seem chiefly to value. For this reason, when the French, or other foreigners, describe our breed, they all mention, as a fault, the awkward and ungainly motion of our horses; they allow them to be very good indeed, but they will not grant them an easy or an elegant carriage.* But these writers do not consider that this seeming want of grace is entirely the result of our manner of breaking them. We consult only speed and dispatch in this animal's motions; the French, and other nations, are more anxious for parade and spirit. For this reason we always throw our horses forward, while they put them upon their haunches; we give them an easy swift gait of going, that covers a great deal of ground; they, on the contrary, throw them back, giving them a more showy appearance indeed, but one infinitely less useful. The fault of our manner of breaking is, that the horse is sometimes apt to fall forward; the French managed horse never falls before, but more usually on one side; and for this reason the rider wears stiff boots, to guard his legs against such accidents. However, it would be a very easy matter to give our horses all that grace

* See Buffon's account of our horses.

which foreigners are so fond of; but it would certainly take from their swiftness and durability.

But in what degree of contempt soever foreigners might formerly have held our horses, they have for some time perceived their error, and our English hunters are considered as the noblest and the most useful horses in the world. Our geldings are therefore sent over to the continent in great numbers, and sell at very great prices: as for our mares and stallions, there is a law prohibiting their exportation; and one similar to this is said to have obtained even as early as the times of Athelstan, who prohibited their exportation, except where designed as presents.

Roger de Belegme, created Earl of Shrewsbury by William the Conqueror,* is the first who is recorded to have made attempts towards the mending our native breed. He introduced Spanish stallions into his estate at Powisland in Wales, from which that part of the country was for many ages after famous for a swift and generous race of horses: however, at that time strength and swiftness were more regarded than beauty; the horses' shapes in time of action being entirely hid by a coat of armour, which the knights then usually put upon them, either by way of ornament or defence.

The number of our horses in London alone, in the time of King Stephen, is said to have amounted to twenty thousand. However, long after, in the times of Queen Elizabeth, the whole kingdom

* British Zoology, vol. i. p. 4. To this work I am indebted for several particulars with regard to the native animals of this island.

could not supply two thousand horses to form our cavalry. At present the former numbers seem revived; so that in the late war we furnished out above thirteen thousand horsemen, and could, if hard pushed, supply above four times that number. How far this great increase of horses among us may be beneficial or otherwise, is not the proper business of the present page to discuss; but certain it is, that where horses increase in too great a degree, men must diminish proportionably; as that food which goes to supply the one, might very easily be converted into nourishment to serve the other. But perhaps it may be speculating too remotely, to argue for the diminution of their numbers upon this principle, since every manufacture we export into other countries takes up room, and may have occupied that place which in a state of greater simplicity might have given birth and subsistence to mankind, and have added to population.

Be this as it will, as we have been at such expense and trouble to procure an excellent breed of horses, it is not now to be expected that we should decline the advantages arising from it, just when in our possession. It may be, therefore, the most prudent measure in our legislature to encourage the breed, as an useful branch of commerce, and a natural defence to the country. But how far this end is answered by the breeding up of racers, is what most persons versed in this subject are very apt to question. They assert, that the running horse, as the breed has been for a long time refined, is unfit for any other service

than that of the course, being too slight either for the road, the chase, or the combat; and his joints so delicately united, as to render him subject to the smallest accidents. They therefore conclude, that less encouragement given to racing would be a means of turning us from breeding rather for swiftness than strength, and that we should thus be again famous for our strong hunters, which they say are wearing out from among us.

How far this may be fact, I will not take upon me to determine, being but little versed in a subject that does not properly come within the compass of natural history. Instead, therefore, of farther expatiating on this well known animal's qualifications, upon which many volumes might easily be written, I will content myself with just mentioning the description of Camerarius, in which he professes to unite all the perfections which a horse ought to be possessed of. "It must," says he, "have three parts like those of a woman; the breast must be broad, the hips round, and the mane long: it must in three things resemble a lion; its countenance must be fierce, its courage must be great, and its fury irresistible: it must have three things belonging to the sheep; the nose, gentleness, and patience: it must have three of a deer; head, leg, and skin: it must have three of a wolf; throat, neck, and hearing: it must have three of a fox; ear, tail, and trot: three of a serpent; memory, sight, and flexibility: and, lastly, three of a hare; running, walking, and perseverance."

CHAPTER XII.

OF THE ASS.*

ALTHOUGH this animal is very easily distinguished from the horse at first sight, yet, upon closer inspection, the similitude between them is very striking. They have both a similar outline in the external parts; the same conformation within. One would be led, from the great resemblance there is between them, to suppose them of the same species, and that the ass was only a horse degenerated; however, they are perfectly distinct, and there is an inseparable line drawn between them, for the mule they produce is barren. This seems to be the barrier between every species of animals; this keeps them asunder, and preserves the unities of their form. If the mule, or the monster bred between two animals whose form nearly approaches, is no longer fertile, we may then conclude that these animals, however resembling, are of different kinds. Nature has providently stopped the fruitfulness of these ill-formed productions, in order to preserve the form of every animal uncontaminated: were it not for this, the races would quickly be mixed with each other, no one kind would preserve its original perfection, every creature would quickly degene-

* Many parts of this account are extracted from Daubenton and Buffon, which I mention here to avoid troubling the reader with a multiplicity of quotations.

rate, and the world would be stocked with imperfection and deformity.

The horse and the ass, therefore, though so nearly approaching in form, are of two distinct kinds, different in their natures; and were there but one of each kind, both races would then be extinguished. Their shapes and their habits may indeed be very nearly alike; but there is something in every animal, besides its conformation or way of life, that determines its specific nature. Thus there is much greater resemblance between the horse and the ass, than between the sheep and the goat; and yet the latter produce an animal that is by no means barren, but which quickly reproduces an offspring resembling the sheep, while the mule of the former is marked with certain sterility. The goat and the sheep may be therefore said to be of one kind, although so much unlike in figure; while the horse and the ass are perfectly distinct, though so closely resembling. It has indeed been said by Aristotle, that their male is sometimes prolific; this, however, has not been confirmed by any other testimony, although there has elapsed a period of near two thousand years to collect the evidence.

But what tends to put the subject out of dispute is, that the two animals are found in a state of nature entirely different. The Onager, or wild ass, is seen in still greater abundance than the wild horse; and the peculiarities of its kind are more distinctly marked than in those of the tame one. Had it been a horse degenerated, the likeness would be stronger between them the higher

we went to the original stock from whence both have been supposed to be sprung. The wild animals of both kinds would, in such a case, resemble each other much more than those of the tame kind, upon whom art has for a succession of ages been exercising all its force, and producing strange habits and new alterations. The contrary, however, obtains, and the wild ass is even more assinine, if I may so express it, than that bred in a state of domestic servitude; and has even a natural aversion to the horse, as the reader will shortly learn.

The wild ass has by some writers been confounded with the zebra, but very improperly, for they are of a very different species. The wild ass is not streaked like the zebra, nor is his shape so beautiful: his figure is pretty much the same as that of the common ass, except that he is of a brighter colour, and has a white list running from his head to his tail. This animal is found wild in many islands of the Archipelago, particularly in that of Cerigo. There are many wild asses in the deserts of Libya and Numidia, that run with such amazing swiftness that scarcely even the coursers of the country can overtake them. When they see a man, they set up a horrid braying, and stop short all together, till he approaches near them; they then, as if by common consent, fly off with great speed; and it is upon such occasions that they generally fall into the traps which are previously prepared to catch them. The natives take them chiefly upon account of their flesh, which they esteem as delicious eating; and for their

skins, of which that kind of leather is made which is called *shagreen*.

Olearius relates, that the monarch of Persia invited him on a certain day to be present at an entertainment of a very peculiar nature, which was exhibited in a small building near the palace resembling a theatre. After a collation of fruits and sweetmeats, more than thirty of these wild asses were driven into the area, among which the monarch discharged several shot, and some arrows, and in which he was imitated by some of the rest of his attendants. The asses finding themselves wounded, and no way of escaping, instantly began to attack each other, biting with great fierceness, and braying terribly. In this manner they continued their mutual animosity, while the arrows were poured in from above until they were all killed; upon which they were ordered to be taken, and sent to the king's kitchen at Ispahan. The Persians esteem the flesh of this animal so highly, that its delicacy is even become a proverb among them. What may be the taste of the wild ass's flesh we are unable to say, but certain it is, that the flesh of the tame ass is the worst that can be obtained, being dryer, more tough, and more disagreeable than horse flesh. Galen even says that it is very unwholesome. Yet we should not judge hastily upon the different tastes of different people, in the preference they give to certain meats. The climate produces very great changes in the tenderness and the savour of several viands: that beef, for instance, which is so juicy and good in England, is extremely tough and dry when

killed under the Line; on the contrary, that pork which is with us so unpalatable in summer, in the warmer latitudes, where it is always hotter than here, is the finest eating they have, and much preferable to any hog's flesh in Europe.

The ass, like the horse, was originally imported into America by the Spaniards, and afterwards by other nations. That country seems to have been peculiarly favourable to this race of animals, and where they have run wild, they have multiplied in such numbers, that in some places they are become a nuisance.* In the kingdom of Quito, the owners of the grounds where they are bred suffer all persons to take away as many as they can, on paying a small acknowledgment, in proportion to the number of days their sport lasts. They catch them in the following manner: A number of persons go on horseback, and are attended by Indians on foot; when arrived at the proper places, they form a circle in order to drive them into some valley, where at full speed they throw the noose, and endeavour to halter them. Those creatures, finding themselves enclosed, make very furious efforts to escape; and if only one forces his way through, they all follow with an irresistible impetuosity. However, when noosed, the hunters throw them down and secure them with fetters, and thus leave them till the chase is over. Then, in order to bring them away with greater facility, they pair them with tame beasts of the same kind; but this is not easily performed, for they are so

* Ulloa, vol. i. p. 316.

remarkably fierce that they often hurt the persons who undertake to manage them. They have all the swiftness of horses, and neither declivities nor precipices can retard their career. When attacked, they defend themselves with their heels and mouth with such activity, that without slackening their pace they often maim their pursuers. But the most remarkable property in these creatures is, that after carrying their first load, their celerity leaves them, their dangerous ferocity is lost, and they soon contract the stupid look and dullness peculiar to the assinine species. It is also observable, that these creatures will not permit a horse to live among them. They always feed together; and if a horse happens to stray into the place where they graze, they all fall upon him, and without giving him the liberty of flying, they bite and kick him till they leave him dead upon the spot.

Such is this animal in its natural state, swift, fierce, and formidable: but, in his state of tameness, the ass presents a very different picture; the moment his native liberty is repressed, he seems entirely to give up all claims to freedom, and he assumes a patience and submission even humbler than his situation. He is, in a state of tameness, the most gentle and quiet of all animals. He suffers with constancy, and perhaps with courage, all the ill treatment that cruelty and caprice are pleased to inflict. He is temperate with regard to the quantity and the quality of his provision. He is contented with the most neglected weeds, and makes his humble repast upon what the horse

and other animals leave behind. If he gives the preference to any vegetable, it is to the plantain, for which he is often seen to neglect every other herb in the pasture: but he is chiefly delicate with respect to his water; he drinks only at the clearest brooks, and chiefly those to which he has been accustomed. He drinks as soberly as he eats, and never, like the horse, dips his nose into the stream. As he is seldom saddled, he frequently rolls himself upon the grass; and lies down, for this purpose, as often as he has an opportunity, without minding what becomes of his burden. He never rolls, like the horse, in the mud; he even fears to wet his feet, and turns out of his way to avoid the dirty parts of a road.

When very young, the ass is sprightly, and even tolerably handsome; but he soon loses these qualifications, either by age or bad treatment, and he becomes slow, stupid, and headstrong. He seems to shew no ardour, except for the female, having been often known to die after the covering. The she-ass is not less fond of her young than the male is of her; and we are assured that she will cross fire and water to protect or rejoin it. This animal is sometimes not less attached to his owner, by whom he is too often abused. He scents him at a distance, and distinguishes him from others in a crowd; he knows the ways he has passed, and the places where he inhabits.

When overloaded, the ass shews the injustice of his master, by hanging down his head and lowering his ears; when he is too hard pressed, he opens his mouth and draws back his lips in a very

disagreeable manner. If his eyes are covered he will not stir a step; and if he is laid down in such a manner that one eye is covered with the grass while the other is hidden with a stone, or whatever is next at hand, he will continue fixed in the same situation, and will not so much as attempt to rise to free himself from those slight impediments. He walks, trots, and gallops like a horse; but although he sets out very freely at first, yet he is soon tired, and then no beating will make him mend his pace. It is in vain that his unmerciful rider exerts his whip or his cudgel; the poor little animal bears it all with patience, and without a groan, and, conscious of his own imbecility, does not offer even to move.

Notwithstanding the stupid heaviness of his air, he may be educated with as much ease as any other animal; and several have been brought up to perform, and exhibited as a show. In general, however, the poor animal is entirely neglected. Man despises this humble, useful creature, whose efforts are exerted to please him, and whose services are too cheaply purchased. The horse is the only favourite, and upon him alone all expense and labour are bestowed. He is fed, attended, and stabled, while the ass is abandoned to the cruelty of the lowest rustics, or even to the sport of children, and instead of gaining by the lessons he receives, is always a loser. He is conducted along by blows; he is insulted by unnecessary stripes; he is overloaded by the lazy; and, being generally the property of the poor, he shares with them in their wants and their dis-

tresses. Thus this faithful animal, which, were there no horses, would be the first of the quadruped kind in our esteem, is now considered as nothing; his properties and qualifications being found in a higher degree elsewhere, he is entirely disregarded; and, from being the second, he is degraded into one of the most useless of the domestic quadrupeds.

For this reason, very little care has been taken to improve the breed; it is suffered to degenerate; and it is probable, that, of all other animals, this alone is rendered feebler and more diminutive by being in a state of domestic servitude. The horse, the cow, and the sheep, are rendered larger by the assiduity of man; the ass is suffered to dwindle every generation, and particularly in England, where it is probable that, but for the medicinal qualities of its milk, the whole species would have ere now been extinguished. Nevertheless, we have good reasons to believe, that, were the same care bestowed on the ass that is spent upon the horse, were the same industry used in crossing the breed and improving it, we should see the ass become, from his present mean state, a very portly and serviceable animal; we should find him rival the horse in some of his perfections, and exceed him in others. The ass, bulk for bulk, is stronger than the horse; is more sure-footed; and, though more slow in his motions, he is much less apt to start out of the way.

The Spaniards, of all people in Europe, seem alone to be acquainted with the value of the ass. They take all proper precautions to improve the

breed; and I have seen a jack-ass, from that country, above fifteen hands high. This animal, however, seems originally a native of Arabia. A warm climate is known to produce the largest and the best; their size and spirit decline in proportion as they advance into colder regions.

Though now so common in all parts of England, the ass was entirely lost amongst us during the reign of Queen Elizabeth. Hollingshed informs us that our land did yield no asses.* However, there are accounts of their being common in England before that time. In Sweden they are at present a sort of rarity; nor does it appear by the last history of Norway that they have yet reached that country. It is in the hotter climates alone that we are to look for the original of this serviceable creature. In Guinea, they are larger and more beautiful than even the horses of the same country. In Persia, they have two kinds; one of which is used for burdens, being slow and heavy; the other, which is kept for the saddle, being smooth, stately, and nimble. They are managed as horses, only that the rider sits nearer the crupper, and they are taught to amble like them. They generally cleave their nostrils to give them more room for breathing, and many of these are sold for forty or fifty pounds.

The ass is a much more hardy animal than the horse, and liable to fewer diseases. Of all animals covered with hair, he is the least subject to vermin, for he has no lice, probably owing to the

* British Zoology, vol. i. p. 11.

dryness and the hardness of his skin. Like the horse he is three or four years in coming to perfection, he lives till twenty to twenty-five, sleeps much less than the horse, and never lies down for that purpose, unless very much tired. The she-ass goes above eleven months with young, and never brings forth more than one at a time. The mule may be engendered either between a horse and a she-ass, or between a jack-ass and a mare. The latter breed is every way preferable, being larger, stronger, and better shaped. It is not yet known whether the animal called the Gimerro be one of these kinds, or, as is asserted, bred between the ass and the bull. While naturalists affirm the impossibility of this mixture, the natives of the Alpine countries, where this animal is bred, as strongly insist upon its reality. The common mule is very healthy, and will live above thirty years, being found very serviceable in carrying burdens, particularly in mountainous and stony places, where horses are not so sure-footed. The size and strength of our asses is at present greatly improved by the importation of Spanish jack-asses; and it is probable we may come in time to equal the Spaniards in breeding them, where it is not uncommon to give fifty or sixty guineas for a mule; and, indeed, in some mountainous countries, the inhabitants cannot well do without them. Their manner of going down the precipices of the Alps, or the Andes, is very extraordinary; and with it we will conclude their history. In these passages, on one side are steep eminences, and on the other frightful abysses; and, as they

generally follow the direction of the mountain, the road, instead of lying in a level, forms at every little distance steep declivities of several hundred yards downward. These can only be descended by mules; and the animal itself seems sensible of the danger, and the caution that is to be used in such descents. When they come to the edge of one of these descents, they stop without being checked by the rider; and if he inadvertently attempts to spur them on, they continue immoveable. They seem all this time ruminating on the danger that lies before them, and preparing themselves for the encounter. They not only attentively view the road, but tremble and snort at the danger. Having prepared for the descent, they place their fore-feet in a posture, as if they were stopping themselves; they then also put their hinder feet together, but a little forward, as if they were going to lie down. In this attitude, having taken as it were a survey of the road, they slide down with the swiftness of a meteor. In the mean time, all the rider has to do is to keep himself fast on the saddle without checking the rein, for the least motion is sufficient to disorder the equilibrium of the mule; in which case they both unavoidably perish. But their address in this rapid descent is truly wonderful; for in their swiftest motion, when they seem to have lost all government of themselves, they follow exactly the different windings of the road, as if they had previously settled in their minds the route they were to follow, and taken every precaution for their safety. In this journey, the natives, who are

placed along the sides of the mountains, and hold by the roots of the trees, animate the beast with shouts, and encourage him to perseverance. Some mules, after being long used to these journeys, acquire a kind of reputation for their safety and skill; and their value rises in proportion to their fame.*

CHAPTER XIII.

OF THE ZEBRA.

THERE are but three animals of the horse kind: The horse, which is the most stately and courageous; the ass, which is the most patient and humble; and the zebra, which is the most beautiful, but at the same time the wildest animal in nature. Nothing can exceed the delicate regularity of this creature's colour, or the lustrous smoothness of its skin; but, on the other hand, nothing can be more timid or more untameable.†

* Ulloa, vol. i.

† [To these may be added the Quacha, or Quagga. This animal, till of late, was supposed to be the female of the zebra; but recent observations prove that the male and female zebra are marked alike, and the quagga is now acknowledged to be a distinct species. It is about the same size as the zebra, and striped like it on the head and body, but with fewer lines. The flanks are spotted; the rump is plain; the ground-colour of the head, neck, body, and rump, a bright bay; the belly, thighs, and legs are white, and free from all marks. It differs likewise from the zebra in being thicker and stronger made, and in being more docile; one of them having been so far broke by a Dutch colonist at the Cape, as to draw in a cart.]

It is chiefly a native of the southern parts of Africa; and there are whole herds of them often seen feeding in those extensive plains that lie towards the Cape of Good Hope. However, their watchfulness is such, that they will suffer nothing to come near them; and their swiftness so great, that they readily leave every pursuer far behind. The zebra, in shape, rather resembles the mule, than the horse or the ass. It is rather less than the former, and yet larger than the latter. Its ears are not so long as those of the ass, and yet not so small as in the horse kind. Like the ass, its head is large, its back straight, its legs finely placed, and its tail tufted at the end; like the horse, its skin is smooth and close, and its hind quarters round and fleshy. But its greatest beauty lies in the amazing regularity and elegance of its colours. In the male, they are white and brown; in the female, white and black. These colours are disposed in alternate stripes over the whole body, and with such exactness and symmetry, that one would think nature had employed the rule and compass to paint them. These stripes, which, like so many ribands, are laid all over its body, are narrow, parallel, and exactly separated from each other. It is not here, as in other party-coloured animals, where the tints are blended into each other; every stripe here is perfectly distinct, and preserves its colour round the body, or the limb, without any diminution. In this manner are the head, the body, the thighs, the legs, and even the tail and the ears, beautifully streaked, so that at a little distance one would be apt to sup-

pose that the animal was dressed out by art, and not thus admirably adorned by nature.

In the male zebra, the head is striped with fine bands of black and white, which in a manner centre in the forehead. The ears are variegated with a white and dusky brown. The neck has broad stripes of the same dark brown running round it, leaving narrow white stripes between. The body is striped also across the back with broad bands, leaving narrower spaces of white between them, and ending in points at the sides of the belly, which is white, except a black line pectinated on each side, reaching from between the fore-legs, along the middle of the belly, two-thirds of its length. There is a line of separation between the trunk of the body and the hinder quarters, on each side; behind which, on the rump, is a plat of narrow stripes, joined together by a stripe down the middle, to the end of the tail. The colours are different in the female; and in none the stripes seem entirely to agree in form, but in all they are equally distinct; the hair equally smooth and fine; the white, shining and unmixed; and the black, or brown, thick and lustrous.

Such is the beauty of this creature, that it seems by nature fitted to satisfy the pride and the pleasure of man; and formed to be taken into his service. Hitherto, however, it appears to have disdained servitude, and neither force nor kindness have been able to wean it from its native independence and ferocity. But this wildness might, perhaps, in time be surmounted; and

it is probable the horse and the ass, when first taken from the forest, were equally obstinate, fierce, and unmanageable. M. Buffon informs us, that the zebra from which he took his description could never be entirely mastered, notwithstanding all the efforts which were tried to tame it. They continued, indeed, to mount it, but then with such precautions as evidently showed its fierceness, for two men were obliged to hold the reins while the third ventured upon its back; and even then it attempted to kick whenever it perceived any person approaching. That which is now in the Queen's menagerie, at Buckingham-Gate, is even more vicious than the former; and the keeper who shows it, takes care to inform the spectators of its ungovernable nature. Upon my attempting to approach, it seemed quite terrified, and was preparing to kick, appearing as wild as if just caught, although taken extremely young, and used with the utmost indulgence. Yet still it is most probable that this animal, by time and assiduity, could be brought under subjection. As it resembles the horse in form, without all doubt it has a similitude of nature, and only requires the efforts of an industrious and skilful nation to be added to the number of our domestics. It is not now known what were the pains and dangers which were first undergone to reclaim the breed of horses from savage ferocity; these, no doubt, made an equal opposition; but by being opposed by an industrious and enterprising race of mankind, their spirit was at last subdued, and their freedom restrained. It is

otherwise with regard to the zebra: it is the native of countries where the human inhabitants are but little raised above the quadruped. The natives of Angola, or Caffraria, have no other idea of advantage from horses but as they are good for food; neither the fine stature of the Arabian courser, nor the delicate colourings of the zebra, have any allurements to a race of people who only consider the quantity of flesh, and not its conformation. The delicacy of the zebra's shape, or the painted elegance of its form, are no more regarded by such, than by the lion that makes it his prey. For this reason, therefore, the zebra may hitherto have continued wild, because it is the native of a country where there have been no successive efforts made to reclaim it. All pursuits that have been hitherto instituted against it, were rather against its life than its liberty: the animal has thus been long taught to consider man as its most mortal enemy; and it is not to be wondered that it refuses to yield obedience, where it has so seldom experienced mercy. There is a kind of knowledge in all animals, that I have often considered with amazement; which is, that they seem perfectly to know their enemies, and to avoid them. Instinct, indeed, may teach the deer to fly from the lion, or the mouse to avoid the cat: but what is the principle that teaches the dog to attack the dog-butcher wherever he sees him? In China, where the killing and dressing dogs is a trade, whenever one of these people move out, all the dogs of the village, or the street, are sure to be after him. This I should hardly

have believed, but that I have seen more than one instance of it among ourselves. I have seen a poor fellow, who made a practice of stealing and killing dogs for their skins, pursued in full cry for three or four streets together by all the bolder breed of dogs, while the weaker flew from his presence with affright. How these animals could thus find out their enemy, and pursue him, appears I own unaccountable, but such is the fact; and it not only obtains in dogs, but in several other animals, though perhaps to a less degree. This very probably may have been, in some measure, a cause that has hitherto kept the zebra in its state of natural wildness; and in which it may continue, till kinder treatment shall have reconciled it to its pursuers.

It is very likely, therefore, as a more civilized people are now placed at the Cape of Good Hope, which is the chief place where this animal is found, that we may have them tamed and rendered serviceable. Nor is its extraordinary beauty the only motive we have for wishing this animal among the number of our dependants: its swiftness is said to surpass that of all others; so that the speed of a zebra is become a proverb among the Spaniards and Portuguese. It stands better upon its legs also than the horse, and is consequently stronger in proportion. Thus, if by proper care we improved the breed, as we have in other instances, we should probably in time come to have a race as large as the horse, as fleet, as strong, and much more beautiful.

The zebra, as was said, is chiefly a native of the Cape of Good Hope. It is also found in the kingdom of Angola; and, as we are assured by Lopez, in several provinces also of Barbary. In those boundless forests it has nothing to restrain its liberty; it is too shy to be caught in traps, and therefore seldom taken alive. It would seem, therefore, that none of them have ever been brought into Europe that were caught sufficiently young, so as to be untinctured by their original state of wildness. The Portuguese, indeed, pretend that they have been able to tame them, and that they have sent four from Africa to Lisbon, which were so far brought under as to draw the king's coach;* they add, that the person who sent them over had the office of notary conferred upon him for his reward, which was to remain to him and his posterity for ever: but I do not find this confirmed by any person who says he saw them. Of those which were sent to Brasil, not one could be tamed; they would permit one man only to approach them; they were tied up very short; and one of them, which had by some means got loose, actually killed his groom, having bitten him to death.† Notwithstanding this, I believe, were the zebra taken up very young, and properly treated, it might be rendered as tame as any other animal; and Merolla, who saw many of them, asserts, that when tamed, which he speaks of as being common enough, they are not less estimable for their swiftness than their beauty.

* Dapper. † Pyrard. tom. ii. p. 376.

This animal, which is neither to be found in Europe, Asia, or America, is nevertheless very easily fed. That which came over into England some years ago would eat almost any thing, such as bread, meat, and tobacco; that which is now among us subsists entirely upon hay. As it so nearly resembles the horse and the ass in structure, so it probably brings forth annually as they do. The noise they make is neither like that of a horse nor an ass, but more resembling the confused barking of a mastiff dog. In the two which I saw, there was a circumstance that seems to have escaped naturalists; which is, that the skin hangs loose below the jaw upon the neck, in a kind of dewlap, which takes away much from the general beauty. But whether this be a natural or accidental blemish, I will not take upon me to determine.

These animals are often sent as presents to the princes of the East. We are told that one of the governors of Batavia gave a zebra, which had been sent to him from Africa, to the emperor of Japan, for which he received as an equivalent for the Company a present to the value of sixty thousand crowns.* Teller also relates, that the Great Mogul gave two thousand ducats for one of them; and it is frequent with the African ambassadors to the court of Constantinople, to bring some of these animals with them as presents for the Grand Signior.

* Navendorf.

CHAPTER XIV.

OF RUMINATING ANIMALS.

Of all animals, those that chew the cud are the most harmless, and the most easily tamed. As they live entirely upon vegetables, it is neither their interest nor their pleasure to make war upon the rest of the brute creation: content with the pastures where they are placed, they seldom desire to change, while they are furnished with a proper supply; and fearing nothing from each other, they generally go in herds for their mutual security. All the fiercest of the carnivorous kinds seek their food in gloomy solitude; these, on the contrary, range together; the very meanest of them are found to unite in each other's defence; and the hare itself is a gregarious animal in those countries where it has no other enemies but the beasts of the forest to guard against.

As the food of ruminant animals is entirely of the vegetable kind, and as this is very easily procured, so these animals seem naturally more indolent and less artful than those of the carnivorous kinds; and as their appetites are more simple, their instincts seem to be less capable of variation. The fox or the wolf are for ever prowling; their long habits of want give them a degree of sharpness and cunning; their life is a continued scene of stratagem and escape: but the patient ox, or the deer, enjoy the repast that nature has abun-

dantly provided, certain of subsistence, and content with security.

As nature has furnished these animals with an appetite for such coarse and simple nutriment, so she has enlarged the capacity of the intestines to take in a greater supply. In the carnivorous kinds, as their food is nourishing and juicy, their stomachs are but small, and their intestines short; but in these, whose pasture is coarse, and where much must be accumulated before any quantity of nourishment can be obtained, their stomachs are large and numerous, and their intestines long and muscular. The bowels of a ruminating animal may be considered as an elaboratory, with vessels in it fitted for various transmutations. It requires a long and tedious process before grass can be transmuted into flesh; and for this purpose, nature in general has furnished such animals as feed upon grass with four stomachs, through which the food successively passes, and undergoes the proper separations.

Of the four stomachs with which ruminant animals are furnished, the first is called the *paunch*, which receives the food after it has been slightly chewed; the second is called the *honeycomb*, and is properly nothing more than a continuation of the former: these two, which are very capacious, the animal fills as fast as it can, and then lies down to ruminate, which may be properly considered as a kind of vomiting without effort or pain. The two stomachs above-mentioned being filled with as much as they can contain, and the grass, which was slightly chewed, beginning to swell

with the heat of the situation, it dilates the stomachs, and these again contract upon their contents. The aliment, thus squeezed, has but two passages to escape at; one into the third stomach, which is very narrow; and the other back, by the gullet, into the mouth, which is wider. The greatest quantity, therefore, is driven back through the largest aperture into the mouth to be chewed a second time; while a small part, and that only the most liquid, is driven into the third stomach, through the orifice which is so small. The food which is driven to the mouth, and chewed a second time, is thus rendered more soft and moist, and becomes at last liquid enough to pass into the conduit that goes to the third stomach, where it undergoes a still farther comminution. In this stomach, which is called the *manyfold*, from the number of its leaves, all which tend to promote digestion, the grass has the appearance of boiled spinach, but not yet sufficiently reduced so as to make a part of the animal's nourishment; it requires the operation of the fourth stomach for this purpose, where it undergoes a complete maceration, and is separated to be turned into chyle.

But nature has not been less careful in another respect, in fitting the intestines of these animals for their food. In the carnivorous kinds they are thin and lean; but in ruminating animals they are strong, fleshy, and well covered with fat. Every precaution seems taken that can help their digestion: their stomach is strong and muscular, the more readily to act upon its contents; their intestines are lined with fat, the better to preserve

their warmth; and they are extended to a much greater length, so as to extract every part of that nourishment which their vegetable food so scantily supplies.

In this manner are all quadrupeds of the cow, the sheep, or the deer kind, seen to ruminate, being thus furnished with four stomachs for the macerating of their food. These, therefore, may most properly be called the ruminant kinds, although there are many others that have this quality in a less observable degree. The rhinoceros, the camel, the horse, the rabbit, the marmot, and the squirrel, all chew the cud by intervals, although they are not furnished with stomachs like the former. But not these alone, there are numberless other animals that appear to ruminate; not only birds, but fishes and insects. Among birds are the pelican, the stork, the heron, the pigeon, and the turtle; these have a power of disgorging their food to feed their young. Among fishes are lobsters, crabs, and that fish called the *dorado*. The salmon also is said to be of this number; and, if we may believe Ovid, the scarus likewise; of which he says,*

> Of all the fish that graze beneath the flood,
> He *only* ruminates his former food.

Of insects, the ruminating tribe is still larger: the mole, the cricket, the wasp, the drone, the bee, the grasshopper, and the beetle. All these animals either actually chew the cud, or seem at

* At contra herbosa pisces laxantur arena,
Ut scarus epastas *solus* qui ruminat escas.

least to ruminate. They have the stomach composed of muscular fibres, by means whereof the food is ground up and down, in the same manner as in those which are particularly distinguished by the appellation of *ruminants*.

But not these alone; men themselves have been often known to ruminate, and some even with pleasure. The accounts of these calamities, for such I must consider them, incident to our fellow-creatures, are not very pleasant to read; yet I must transcribe a short one, as given us by Slare in the Philosophical Transactions, as it may in some measure show the satisfaction which the lower tribes of animals enjoy while they ruminate. The man in question was a citizen of Bristol, of about twenty years of age, and what seemed more extraordinary still, of a ruminating family, for his father was frequently subject to the same infirmity, or amusement, as he himself perhaps would call it. This young man usually began to chew his meat over again within about a quarter of an hour after eating. His ruminating after a full meal generally lasted about an hour and a half; nor could he sleep until his task was performed. The victuals upon the return tasted even more pleasantly than at first, and returned as if they had been beaten up in a mortar. If he ate a variety of things, that which he ate at first came up again first; and if this return was interrupted for any time, it produced sickness and disorder, and he was never well till it returned. Instances of this kind, however, are rare and accidental; and it is happy for mankind that they are so. Of all

other animals, we spend the least time in eating: this is one of the great distinctions between us and the brute creation; and eating is a pleasure of so low a kind, that none but such as are nearly allied to the quadruped desire its prolongation.

CHAPTER XV.

OF QUADRUPEDS OF THE COW KIND.

Of all ruminant animals, those of the Cow kind deserve the first rank, both for their size, their beauty, and their services. The horse is more properly an animal belonging to the rich; the sheep chiefly thrives in a flock, and requires attendance; but the cow is more especially the poor man's pride, his riches, and his support. There are many of our peasantry that have no other possession but a cow; and even of the advantages resulting from this most useful creature, the poor are but the nominal possessors. Its flesh they cannot pretend to taste, since then their whole riches are at once destroyed; its calf they are obliged to fatten for sale, since veal is a delicacy they could not make any pretensions to; its very milk is wrought into butter and cheese for the tables of their masters; while they have no share even in their own possession, but the choice of their market. I cannot bear to hear the rich crying out for liberty, while they thus starve their fellow-creatures; and feed them

up with an imaginary good, while they monopolize the real benefits of nature.

In those countries where the men are under better subordination, this excellent animal is of more general advantage. In Germany, Poland, and Switzerland, every peasant keeps two or three cows, not for the benefit of his master, but for himself. The meanest of the peasants there kills one cow at least for his own table, which he salts and hangs up, and thus preserves as a delicacy all the year round. There is scarcely a cottage in those countries that is not hung round with these marks of hospitality; and which often make the owner better contented with hunger, since he has it in his power to be luxurious when he thinks proper. A piece of beef hung up there is considered as an elegant piece of furniture, which, though seldom touched, at least argues the possessor's opulence and ease. But it is very different, for some years past, in this country, where our lower rustics at least are utterly unable to purchase meat any part of the year, and by them even butter is considered as an article of extravagance.

The climate and pasture of Great Britain, however, is excellently adapted to this animal's moderate nature; and the verdure and the fertility of our plains are perfectly suited to the manner of its feeding, for wanting the upper fore-teeth, it loves to graze on a high rich pasture.* This ani-

* [Quadrupeds of the cow kind have the horns hollow within, and turned forward in the form of crescents: they have eight fore-teeth in the under jaw, but none in the upper, their place being supplied by a hard membrane; and they have no canine teeth in either jaw.]

mal seems but little regardful of the quality of its food, provided it be supplied in sufficient abundance; it makes no particular distinctions in the choice of its herbage, but indiscriminately and hastily devours the proper quantity. For this reason, in our pastures, where the grass is rather high than succulent, more flourishing than nutritious, the cow thrives admirably; and there is no part of Europe where the tame animal grows larger, yields more milk, and more readily fattens, than with us.

Our pastures supply them with abundance, and they in return enrich the pasture; for, of all animals, the cow seems to give back more than it takes from the soil. The horse and the sheep are known, in a course of years, to impoverish the ground. The land where they have fed becomes weedy, and the vegetables coarse and unpalatable: on the contrary, the pasture where the cow has been bred, acquires a finer, softer surface, and becomes every year more beautiful and even. The reason is, that the horse being furnished with fore-teeth in the upper jaw, nips the grass closely, and, therefore, only chooses that which is the most delicate and tender; the sheep also, though with respect to its teeth formed like the cow, only bites the most succulent parts of the herbage: these animals, therefore, leave all the high weeds standing; and while they cut the finer grass too closely, suffer the ranker herbage to vegetate and overrun the pasture. But it is otherwise with the cow; as its teeth cannot come so close to the ground as those of the horse,

nor so readily as those of the sheep, which are less, it is obliged to feed upon the tallest vegetables that offer; thus it eats them all down, and in time levels the surface of the pasture.

The age of the cow is known by the teeth and horns. This animal is furnished with eight cutting teeth in the lower jaw; at the age of ten months, the two middlemost of these fall out, and are replaced by others, that are not so white, but broader; at the age of sixteen months, the two next milk-white teeth fall out likewise, and others come up in their room: thus, at the end of every six months the creature loses and gains, till, at the age of three years, all the cutting teeth are renewed, and then they are long, pretty white, and equal; but in proportion as the animal advances in years, they become irregular and black, their inequalities become smoother, and the animal less capable of chewing its food. Thus the cow often declines from this single cause; for, as it is obliged to eat a great deal to support life, and as the smoothness of the teeth makes the difficulty of chewing great, a sufficient quantity of food cannot be supplied to the stomach. Thus the poor animal sinks in the midst of plenty, and every year grows leaner and leaner, till it dies.

The horns are another, and a surer method of determining this animal's age. At four years of age, the cow has small pointed neat smooth horns, thickest near the head; at five, the horns become larger, and are marked round with the former year's growth. Thus, while the animal continues to live, the horns continue to lengthen; and

every year a new ring is added at the root; so that, allowing three years before their appearance, and then reckoning the number of rings, we have, in both together, the animal's age exactly.

As we have, indisputably, the best breed of horned cattle of any in Europe, so it was not without the same assiduity that we came to excel in these as in our horses. The breed of cows has been entirely improved by a foreign mixture, properly adapted to supply the imperfections of our own. Such as are purely British, are far inferior in size to those on many parts of the continent; but those which we have thus improved, by far excel all others. Our Lincolnshire kind derive their size from the Holstein breed; and the large hornless cattle that are bred in some parts of England came originally from Poland. We were once famous for a wild breed of these animals, but these have long since been worn out;* and perhaps no kingdom in Europe can

[* In the "General View of the Agriculture of the County of Northumberland, drawn up for the consideration of the Board of Agriculture," there is an interesting account of the Wild Cattle still found in Lord Tankerville's Park at Chillingham, near Berwick-upon-Tweed. They are the only remains in this country, it is believed, of the true and genuine breed of that species.

"Their colour is invariably white, muzzle black; the whole of the inside of the ear, and about one-third of the outside, from the tip downwards, red; horns white, with black tips, very fine, and bent upwards. Some of the bulls have a thin upright mane, about an inch and a half or two inches long. The weight of the oxen is from 35 to 45 stone, and the cows from 25 to 35 stone the four quarters, 14 lb. to the stone. The beef is finely marbled, and of excellent flavour.

"From the nature of their pasture, and the frequent agitation they are put into by the curiosity of strangers, it cannot be expected they should get very fat; yet the six years' old oxen are generally very good beef; from whence it may be fairly supposed, that in proper situations they would feed well.

furnish so few wild animals of all kinds as our own. Cultivation and agriculture are sure to

" At the first appearance of any person, they set off at full speed, and gallop to a considerable distance; when they make a wheel round and come boldly up again, tossing their heads in a menacing manner. On a sudden they make a full stop, at the distance of forty or fifty yards, looking wildly at the object of their surprise, but, upon the least motion being made, they again turn round, and gallop off with equal speed; but, forming a shorter circle, and returning with a bolder and more threatening aspect, they approach much nearer, when they make another stand, and again gallop off. This they do several times, shortening their distance, and advancing nearer, till they come within a few yards, when most people think it prudent to leave them.

" The mode of killing them was, perhaps, the only modern remains of the grandeur of ancient hunting. On notice being given that a wild bull would be killed upon a certain day, the inhabitants of the neighbourhood came, in great numbers, both horse and foot. The horsemen rode off the bull from the rest of the herd, until he stood at bay, when a marksman dismounted and shot. At some of these huntings, twenty or thirty shots have been fired before he was subdued. On such occasions, the bleeding victim grew desperately furious, from the smarting of his wounds, and the shoutings of savage joy that were echoing from every side. From the number of accidents that happened, this dangerous mode has been seldom practised of late years; the park-keeper alone generally shooting them with a rifled gun, at one shot.

" When the cows calve, they hide their calves, for a week or ten days, in some sequestered situation, and go and suckle them two or three times a-day. If any person come near the calves, they clap their heads close to the ground, and lie like a hare in form, to hide themselves. This is a proof of their native wildness; and is corroborated by a circumstance that happened to the writer of this narrative, (Dr Tuller), who found a hidden calf, two days old, very lean, and very weak. On stroking its head it got up, pawed two or three times like an old bull, bellowed very loud, retired a few steps, and bolted at his legs with all its force. It then began to paw again, bellowed, stepped back, and bolted as before; but knowing its intention, and stepping aside, it missed me, fell, and was so very weak that it could not rise, though it made several efforts: But it had done enough; the whole herd were alarmed, and coming to its rescue, obliged me to retire: for the dams will allow no person to touch their calves, without attacking them with impetuous ferocity.

" When any one happens to be wounded, or grown weak and feeble through age and sickness, the rest of the herd set upon it, and gore it to death."]

banish these, wherever they are found; and every addition a country receives from art, drives away those animals that are only fitted for a state of nature.

Of all quadrupeds, the cow seems most liable to alteration from its pasture. In the different parts of our own country, we easily perceive the great varieties produced among these animals, by the richness or poverty of the soil. In some they grow to a great bulk; and I have seen an ox sixteen hands high, which is taller than the general run of our horses. In others they appear as diminutive, being not so large as an ass. The breed of the Isle of Man, and most parts of Scotland, is much less in general than in England or Ireland; they are differently shaped also, the dewlap being much smaller, and, as the expression is, the beast has more of the ewe neck. This, till some years ago, was considered in cattle as a deformity; and the cow was chosen, according to Virgil's direction, with a large dewlap: however, at present it is the universal opinion that the cow wants in udder what it has in neck, and the larger the dewlap, the smaller is the quantity of its milk. Our graziers now, therefore, endeavour to mix the two breeds, the large Holstein with the small northern; and from both results that fine milch breed, which excels the cattle of any other part of the world.

This difference, arising from pasture, is more observable in other countries than in our own. The cow kind is to be found in almost every part of the world, large in proportion to the richness

of the pasture, and small as the animal is stinted in its food. Thus Africa is remarkable for the largest and the smallest cattle of this kind; as is also India, Poland, Switzerland, and several other parts of Europe. Among the Eluth Tartars, where the pastures are remarkably rich and nourishing, the cow becomes so large, that he must be a tall man who can reach the tip of its shoulder. On the contrary, in France, where the animal is stinted in its food, and driven from the most flourishing pastures, it greatly degenerates.

But the differences in the size of this animal are not so remarkable as those which are found in its form, its hair, and its horns. The difference is so very extraordinary in many of them, that they have been even considered as a different kind of creature, and names have been given them as a distinct species, when in reality they are all the same.* In this manner, the urus and the bison have been considered, from the variety in their make, to be distinct in their production; but they are all in fact the descendants of one common stock, as they have that certain mark of unity, they breed and propagate among each other. Naturalists have therefore laboured under an obvious error, when, because of the extreme bulk of the urus, or because of the hump upon the back of the bison, they assigned them different places in the creation, and separated a class of animals which was really united. It is true, the horse and the ass do not differ so much in

* Buffon, vol. xxiii. p. 78.

form as the cow and the bison; nevertheless, the former are distinct animals, as their breed is marked with sterility;—the latter are animals of the same kind, as their breed is fruitful, and a race of animals is produced, in which the hump belonging to the bison is soon worn away. The differences, therefore, between the cow, the urus, and the bison, are merely accidental. The same caprice in nature that has given horns to some cows, and denied them to others, may also have given the bison a hump, or increased the bulk of the urus; it may have given the one a mane, or denied a sufficiency of hair to the other.

But, before we proceed farther, it may be proper to describe these varieties, which have been thus taken for distinct kinds.* The urus, or wild bull, is chiefly to be met with in the province of Lithuania, and grows to a size that scarcely any other animal, except the elephant, is found to equal. It is quite black, except a stripe mixed with white, that runs from the neck to the tail along the top of the back; the horns are short, thick, and strong; the eyes are fierce and fiery; the forehead is adorned with a kind of garland of black curled hair, and some of them are found to have beards of the same; the neck is short and strong, and the skin has an odour of musk. The female, though not so big as the male, exceeds the largest of our bulls in size; nevertheless, her udder and teats are so small that they can scarcely be perceived. Upon the whole, however, this

* This description is chiefly taken from Klein.

animal resembles the tame one very exactly, except in some trifling varieties, which his state of wildness, or the richness of the pastures where he is found, may easily have produced.

The bison, which is another variety of the cow kind, differs from the rest in having a lump between its shoulders. These animals are of various kinds; some very large, others as diminutively little. In general, to regard this animal's foreparts, he has somewhat the look of a lion, with a long shaggy mane, and a beard under his chin; his head is little, his eyes red and fiery, with a furious look; the forehead is large, and the horns so big, and so far asunder, that three men might often sit between them. On the middle of the back there grows a bunch almost as high as that of a camel, covered with hair, and which is considered as a great delicacy by those that hunt him. There is no pursuing him with safety, except in forests where there are trees large enough to hide the hunters. He is generally taken by pit-falls; the inhabitants of those countries where he is found wild digging holes in the ground, and covering them over with boughs of trees and grass; then provoking the bison to pursue them, they get on the opposite side of the pit-fall, while the furious animal, running head foremost, falls into the pit prepared for him, and is there quickly overcome and slain.

Besides these real distinctions in the cow kind, there have been many others made that appear to be in name only. Thus the Bonassus, of which naturalists have given us long descriptions, is sup-

posed by Klein and Buffon to be no more than another name for the bison, as the descriptions given of them by the ancients coincide. The Bubalus also of the ancients, which some have supposed to belong to the cow kind, Buffon places among the lower class of ruminant quadrupeds, as it most resembles them in size, shape, and the figure of its horns. Of all the varieties, therefore, of the cow kind, there are but two that are really distinct; namely, the cow and the buffalo: these two are separated by nature; they seem to bear an antipathy to each other; they avoid each other, and may be considered as much removed as the horse is from the ass or the zebra. When, therefore, we have described the varieties of the cow kind, we shall pass on to the buffalo, which being a different animal, requires a separate history.

There is scarcely a part of the world, as was said before, in which the cow is not found in some one of its varieties; either large, like the urus, or humped as the bison; with straight horns, or bending, inverted backwards, or turning sideways to the cheek, like those of the ram; and in many countries they are found without any horns whatsoever. But to be more particular, beginning at the north, the few kine which subsist in Iceland are without horns, although of the same race originally with ours. The size of these is rather relative to the goodness of the pasture, than the warmth or coldness of the climate. The Dutch frequently bring great quantities of lean cattle from Denmark, which they fatten on their own rich grounds. These are in general of a larger

size than our own natural breed, and they fatten very easily. The cattle of the Ukraine, where the pasture is excellent, become very fat, and are considered as one of the largest breeds of Europe. In Switzerland, where the mountains are covered with a rich nourishing herbage, which is entirely reserved for their kine, these animals grow to a very large size. On the contrary, in France, where they get no other grass but what is thought unfit for horses, they dwindle, and grow lean. In some parts of Spain the cow grows to a good size: the wild bull, however, which they pride themselves so much in combating, is a very mean despicable little animal, and somewhat shaped like one of our cows, with nothing of that peculiar sternness of aspect for which our bulls are remarkable. In Barbary, and the provinces of Africa, where the ground is dry, and the pasturage short, the cows are of a very small breed, and give milk in proportion. On the contrary, in Ethiopia they are of a prodigious bigness. The same holds in Persia and Tartary, where in some places they are very small, and in others of an amazing stature. It is thus, in almost every part of the world, this animal is found to correspond in size to the quantity of its provision.

If we examine the form of these animals as they are found tame in different regions, we shall find that the breed of the urus, or those without a hump, chiefly occupies the cold and the temperate zones, and is not so much dispersed towards the south. On the contrary, the breed of the bison, or the animal with a hump, is found in all the

southern parts of the world;* throughout the vast continent of India; throughout Africa, from Mount Atlas to the Cape of Good Hope. In all these countries the bison seems chiefly to prevail; where they are found to have a smooth soft hair, are very nimble of foot, and in some measure supply the want of horses. The bison breed is also more expert and docile than ours; many of them, when they carry burdens, bend their knees to take them up or set them down: they are treated, therefore, by the natives of those countries, with a degree of tenderness and care equal to their utility, and the respect for them in India has degenerated even into blind adoration. But it is among the Hottentots where these animals are chiefly esteemed, as being more than commonly

[* Captain Turner, in his account of an embassy to Thibet, informs us, that the Yak of Tartary is about the height of an English bull, which in the general figure of the body, head, and legs, he resembles, except in having a protuberance over the shoulders. The upper part of his body is clothed with a thick soft wool, but the inferior parts with hair, so long as sometimes to trail on the ground, which is manufactured into tents and ropes. The tail is also composed of a prodigious quantity of long glossy hair, so that not a joint of it is perceptible, but it has much the appearance of being artificially set on. The tails are used throughout the East, under the denomination of *Chowries*, for driving away flies and mosquetoes, and they are also employed as ornamental furniture upon horses and elephants.

These cattle have a downcast heavy look; and indeed they are sullen and suspicious, discovering much impatience at the near approach of strangers. They do not low loud, but make a grunting noise scarcely audible, and that only when under some impression of uneasiness. The chain of mountains which divides Thibet from Bootan is their favourite haunt. In this vicinity the southern glens afford them food and shelter during the severity of winter; and in milder seasons the northern aspect is more congenial to their nature, and admits a wider range. The female gives an abundant supply of rich milk, and the butter produced from it is excellent. The yak varies in colour, as well as in the length and form of the horns; those with white tails are most esteemed, and the horns are sometimes as white as ivory.]

serviceable. They are their fellow-domestics, the companions of their pleasures and fatigues; the cow is at once the Hottentot's protector and servant, assists him in attending his flocks, and guarding them against every invader: while the sheep are grazing, the faithful Backely, as this kind of cow is called, stands or grazes beside them; still, however, attentive to the looks of its master, the backely flies round the field, herds in the sheep that are straying, obliges them to keep within proper limits, and shows no mercy to robbers, or even strangers, who attempt to plunder. But it is not the plunderers of the flock alone, but even the enemies of the nation, that these backelies are taught to combat. Every army of Hottentots is furnished with a proper herd of these, which are let loose against the enemy when the occasion is most convenient. Being thus sent forward, they overturn all before them; they strike every opposer down with their horns, and trample upon them with their feet; and thus often procure their masters an easy victory even before they have attempted to strike a blow. An animal so serviceable, it may be supposed, is not without its reward. The backely lives in the same cottage with its master, and by long habit gains an affection for him; and in proportion as the man approaches to the brute, so the brute seems to attain even to some share of human sagacity. The Hottentot and his backely thus mutually assist each other; and when the latter happens to die, a new one is chosen to succeed him by a council of the old men of the village. The new backely is then joined with one

of the veterans of its own kind, from whom it learns its art, becomes social and diligent, and is taken for life into human friendship and protection.

The bisons, or cows with a hump, are found to differ very much from each other, in the several parts of the world where they are found. The wild ones of this kind, as with us, are much larger than the tame. Some have horns, and some are without any; some have them depressed, and some raised in such a manner that they are used as weapons of annoyance or defence; some are extremely large; and others among them, such as the Zebu, or Barbary cow, are very small. They are all, however, equally docile and gentle when tamed; and, in general, furnished with a fine lustrous soft hair, more beautiful than that of our own breed: their hump is also of different sizes, in some weighing from forty to fifty pounds, in others less; it is not, however, to be considered as a part necessarily belonging to the animal, and probably it might be cut away without much injury: it resembles a gristly fat, and, as I am assured, cuts and tastes somewhat like a dressed udder. The bisons of Malabar, Abyssinia, and Madagascar, are of the great kind, as the pastures there are plentiful. Those of Arabia Petræa, and most parts of Africa, are small, and of the zebu or little kind. In America, especially towards the north, the bison is well known. The American bison, however, is found to be rather less than that of the ancient continent; its hair is longer and thicker, its beard more remarkable,

and its hide more lustrous and soft. There are many of them brought up tame in Carolina; however, their wild dispositions still seem to continue, for they break through all fences to get into the corn-fields, and lead the whole tame herd after them, wherever they penetrate. They breed also with the tame kinds originally brought over from Europe, and thus produce a race peculiar to that country.

From all this it appears,* that naturalists have given various names to animals in reality the same, and only differing in some few accidental circumstances. The wild cow and the tame, the animal belonging to Europe, and that of Asia, Africa, and America, the bonassus and the urus, the bison and the zebu, are all one and the same, propagate among each other, and, in the course of a few generations, the hump wears away, and scarcely any vestiges of savage fierceness are found to remain. Of all animals, therefore, except man alone, the cow seems most extensively propagated. Its nature seems equally capable of the rigours of heat and cold. It is an inhabitant as well of the frozen fields of Iceland, as the burning deserts of Libya. It seems an ancient inmate in every climate, domestic and tame in those countries which have been civilized, savage and wild in the countries which are less peopled, but capable of being made useful in all: able to defend itself in a state of nature against the most powerful enemy of the forest; and only subordi-

* Buffon, vol. xxiii. p. 130.

nate to man, whose force it has experienced, and whose aid it at last seems to require. However wild the calves are which are taken from the dam in a savage state, either in Africa or Asia, they soon become humble, patient, and familiar; and man may be considered, in those countries, as almost helpless without their assistance. Other animals preserve their nature or their form with inflexible perseverance; but these, in every respect, suit themselves to the appetites and conveniencies of mankind; and as their shapes are found to alter, so also does their nature: in no animal is there seen a greater variety of kinds, and in none a more humble and pliant disposition.

THE BUFFALO.

If we should compare the shape of our common cow with that of the bison, the difference will appear very great. The shaggy main of the latter, the beard, the curled forehead, the inverted horns, the broad breast, and the narrow hinder parts, give it the appearance rather of a lion than a cow, and fit it more for a state of war with mankind than a state of servitude. Yet, notwithstanding these appearances, both animals are found to be the same, or at least so nearly allied that they breed among each other, and propagate a race that continues the kind.

On the other hand, if we compare the buffalo with our common cow, no two animals can be

more nearly alike, either in their form or their nature: both equally submissive to the yoke, both often living under the same roof, and employed in the same domestic services; the make and the turn of their bodies so much alike that it requires a close attention to distinguish them; and yet, after all this, no two animals can be more distinct, or seem to have stronger antipathies to each other.* Were there but one of each kind remaining, it is probable the race of both would shortly be extinct. However, such is the fixed aversion formed between these creatures, that the cow refuses to breed with the buffalo, which it nearly resembles; while it is known to propagate with the bison, to which it has, in point of form, but a very distant similitude.

The buffalo is, upon the whole, by no means so beautiful a creature as the cow; his figure is more clumsy and awkward, his air is wilder, and he carries his head lower, and nearer the ground; his limbs are less fleshy, and his tail more naked of hair; his body is shorter and thicker than that of the cow kind, his legs are higher, his head smaller, his horns not so round, black, and compressed, with a bunch of curled hair hanging down between them; his skin is also harder and thicker, more black and less furnished with hair; his flesh, which is hard and blackish, is not only disagreeable to the taste, but likewise to the smell. The milk of the female is by no means so good as that of the cow; it is however produced in great

* Buffon.

abundance. In the warm countries, almost all their cheese is made of the milk of the buffalo; and they supply butter also in large quantities. The veal of the young buffalo is not better eating than the beef of the old. The hide of this animal seems to be the most valuable thing he furnishes. The leather made of it is well known for its thickness, softness, and impenetrability. As these animals are in general larger and stronger than the cow, they are usefully employed in agriculture. They are used in drawing burdens, and sometimes in carrying them, being guided by a ring, which is thrust through their nose. Two buffaloes yoked in a waggon are said to draw more than four strong horses: as their heads and necks are naturally bent downward, they are thus better fitted for the draught, and the whole weight of their bodies is applied to the carriage that is to be drawn forward.

From the size and bulk of the buffalo, we may be easily led to conclude that he is a native of the warmer climates. The largest quadrupeds are generally found in the torrid zone; and the buffalo is inferior, in point of size, only to the elephant, the rhinoceros, or the hippopotamus. The camelopard, or the camel, may indeed be taller, but they are neither so long, nor near so corpulent. Accordingly, we find this animal wild in many parts of India; and tamed also wherever the natives have occasion for his services. The wild buffaloes are very dangerous animals, and are often found to gore travellers to death, and then trample them with their feet, until they have

entirely mangled the whole body; however, in the woods they are not so much to be feared as in the plains, because in the violence of their pursuit their large horns are apt to be entangled in the branches of the trees, which gives those who have been surprised by them time to escape the danger. There is scarcely any other method of avoiding their pursuit: they run with great swiftness; they overturn a tree of moderate growth; and are such swimmers, as to cross the largest rivers without any difficulty. In this manner, like all other large animals of the torrid zone, they are very fond of the water, and, in the midst of their pursuit, often plunge in, in order to cool themselves. The Negroes of Guinea, and the Indians of Malabar, where buffaloes are in great abundance, take great delight in hunting and destroying them: however, they never attempt to face the buffalo openly, but generally climbing up the tree, shoot at him from thence, and do not come down till they find they have effectually dispatched him. When they are tamed, no animal can be more patient or humble; and though by no means so docile as the cow kind, yet they go through domestic drudgeries with more strength and perseverance.

Although these animals be chiefly found in the torrid zone, yet they are bred in several parts of Europe, particularly in Italy, where they make the food and the riches of the poor. The female produces but one at a time, in the same manner as the cow, but they are very different in the times of gestation; for the cow, as we know,

goes but nine months, whereas the buffalo continues pregnant for twelve. They are all afraid of fire, and, perhaps in consequence of this, have an aversion to red colours, that resemble the colour of flame: it is said, that in those countries where they are found in plenty, no person dares to dress in scarlet. In general they are inoffensive animals, if undisturbed, as indeed all those which feed upon grass are found to be; but when they are wounded, or when even but fired at, nothing then can stop their fury; they then turn up the ground with their fore-feet, bellow much louder and more terribly than the bull, and make at the object of their resentment with ungovernable rage. It is happy, in such circumstances, if the person they pursue has a wall to escape over, or some such obstacle, otherwise they soon overtake, and instantly destroy him. It is remarkable, however, that although the horns are so very formidable, they in general make more use of their feet in combat, and rather tread their enemies to death than gore them.

Having thus gone through the history of these animals, it may be proper to observe, that no names have been more indiscriminately used than those of the bull, the urus, the bison, and the buffalo. It therefore becomes such as would have distinct ideas of each, to be careful in separating the kinds, the one from the other, allowing the cow for the standard of all. The urus, whether of the large enormous kind of Lithuania, or the smaller race of Spain, whether with long or short horns, whether with or without long hair

in the forehead, is every way the same with what our common breed was before they were taken from the forest, and reduced to a state of servitude. The bison, and all its varieties, which are known by a hump between the shoulders, is also to be placed in the same class. This animal, whether with crooked or straight horns, whether they be turned towards the cheek, or totally wanting, whether it be large or diminutive, whatever be its colour, or whatever the length of its hair, whether called the *bonassus* by some, or the *bubalus* by others, is but a variety of the cow kind, with whom it breeds, and with whom, of consequence, it has the closest connexion. Lastly, the buffalo, though shaped much more like the cow, is a distinct kind by itself, that never mixes with any of the former; that goes twelve months with young, whereas the cow goes but nine; that testifies an aversion to the latter; and, though bred under the same roof, or feeding in the same pasture, has always kept separate, and makes a distinct race in all parts of the world. These two kinds are supposed to be the only real varieties in the cow kind, of which naturalists have given so many varieties. With respect to some circumstances mentioned by travellers, such as that of many kinds defending themselves by voiding their dung against their pursuers, this is a practice which they have in common with other timid creatures when pursued, and arises rather from fear than a desire of defence. The musky smell, also, by which some have been distinguished, is found common to many of these

kinds in a state of nature, and does not properly make the characteristic marks of any.* The particular kind of noise also which some of them are known to make, which rather resembles grunting than bellowing or lowing, is but a savage variety, which many wild animals have, and yet lose when brought into a state of tameness. For these reasons, M. Buffon, whom I have followed in this description, is of opinion, that the zebu, or little African cow, and the grunting, or Siberian cow, are but different races of the bison, as the shape of the horns, or the length of the hair, are never properly characteristic marks of any animal, but are found to vary with climate, food, and cultivation.

[* The Musk Ox is but of small size, being rather lower than the deer, but larger or thicker in body, with short legs and a very short tail. The hair in the male is of a dusky red colour, extremely fine, and so long as to trail on the ground, and render the animal a seemingly shapeless mass, without distinction of head or tail. Beneath the hair, on all parts of the animal, is a very fine wool, which when manufactured into stockings is said to be more beautiful than silk. The horns are large, and very remarkable: they are united at their origin in the skull; but immediately after, they fall down on each side of the crown of the head, then taper away small, the points turning up. The cow, or female, differs from the male, in having the horns much smaller, and placed at the distance of nine inches from each other at the base. These animals frequent the country about 100 miles inwards to the north-west of Churchill river, in Hudson's Bay, where they are very numerous. They delight most in rocky and barren mountains, and are seldom found at any great distance through the woods. Though a beast of considerable magnitude and apparently unwieldy form, yet it climbs the rocks with great ease and agility, and is nearly as sure-footed as a goat. The calves and young heifers are very good eating; but the flesh of the bulls both smells and tastes so strongly of musk, as to render it very disagreeable. "Of the tail of this animal," says Mr Pennant, "the Esquimaux of Hudson's Bay make a cap of the most horrible appearance; for the hairs fall all round their heads, and cover their faces; yet it is of singular service in keeping off the musquetoes, which would otherwise be intolerable."]

In this manner the number of animals of the cow kind, which naturalists have extended to eight or ten sorts, are reduced to two; and as the utmost deference is paid to the opinion of M. Buffon in this particular, I have taken him for my guide. Nevertheless, there is an animal of the cow kind, which neither he, nor any other naturalist that I know of, has hitherto described, yet which makes a very distinct class, and may be added as a third species.

This animal was shown some years ago in London, and seemed to unite many of the characteristics of the cow and the hog; having the head, the horns, and the tail of the former, with the bristles, the colour, and the grunting of the latter. It was about the size of an ass, but broader and thicker; the colour resembling that of a hog, and the hair bristly, as in that animal. The hair upon the body was thin, as in the hog; and a row of bristles ran along the spine, rather shorter and softer than in the hog kind. The head was rather larger than that of a cow; the teeth were entirely resembling those of that animal, and the tongue was rough in like manner. It fed upon hay; and, consequently, its internal conformation must have resembled that of the cow kind more than the hog, whose food is always chosen of a kind more succulent. The eyes were placed in the head as with the cow, and were pretty nearly of the same colour; the horns were black and flattish, but bent rather backwards to the neck, as in the goat kind; the neck was short and thick, and the back rather rising in the

middle; it was cloven-footed like the cow, without those hinder claws that are found in the hog kinds. But the greatest variety of all in this extraordinary creature, which was a female, was, that it had but two teats, and consequently, in that respect, resembled neither of the kinds to which, in other circumstances, it bore so strong a similitude. Whether this animal was a distinct kind, or a monster, I will not pretend to say. It was shown under the name of the Bonassus, and it was said, by the person who showed it, to have come from India: but no credit is to be given to interested ignorance; the person only wanted to make the animal appear as extraordinary as possible; and I believe would scarcely scruple a lie or two, to increase that wonder in us by which he found the means of living.

CHAPTER XVI.

OF ANIMALS OF THE SHEEP AND GOAT KIND.

As no two animals are found entirely the same, so it is not to be expected that any two races of animals should exactly correspond in every particular. The goat and the sheep are apparently different in the form of their bodies, in their covering, and in their horns. They may from hence be considered as two different kinds with regard to all common and domestic purposes. But if we

come to examine them closer, and observe their internal conformation, no two animals can be more alike; their feet, their four stomachs, their suet, their appetites, all are entirely the same, and show the similitude between them; but what makes a much stronger connexion is, that they propagate with each other. The buck goat is found to produce with the ewe, an animal that in two or three generations returns to the sheep, and seems to retain no mark of its ancient progenitor.* The sheep and the goat, therefore, may be considered as belonging to one family; and were the whole races reduced to one of each, they would quickly replenish the earth with their kind.

If we examine the sheep and goat internally, we shall find, as was said, that their conformation is entirely the same; nor is their structure very remote from that of the cow kind, which they resemble in their hoofs, and in their chewing the cud. Indeed all ruminant animals are internally very much alike. The goat, the sheep, or the deer, exhibit to the eye of the anatomist the same parts in miniature which the cow or the bison exhibited in the great: but the differences between these animals are nevertheless sufficiently apparent. Nature has obviously marked the distinctions between the cow and the sheep kind by their form and size; and they are also distinguished from those of the deer kind by never shedding their horns. Indeed the form and figure of these animals, if there were nothing else, would

* Buffon, *passim.*

seldom fail of guiding us to the kind; and we might almost upon sight tell which belong to the deer kind, and which are to be degraded into that of the goat. However, the annually shedding the horns in the deer, and the permanence in the sheep, draws a pretty exact line between the kinds; so that we may hold to this distinction only, and define the sheep and goat kind as ruminant animals of a smaller size, that never shed their horns.*

If we consider these harmless and useful animals in one point of view, we shall find that both have been long reclaimed, and brought into a state of domestic servitude. Both seem to require protection from man, and are in some measure pleased with his society. The sheep, indeed, is the more serviceable creature of the two; but the goat has more sensibility and attachment. The attending upon both was once the employment of the wisest and the best of men; and those have been ever supposed the happiest times in which these harmless creatures were considered as the chief objects of human attention. In the earliest ages the goat seemed rather the greater favourite, and indeed it continues such in some countries to this day among the poor. However, the sheep has long since become the principal object of human care; while the goat is disregarded by the generality of mankind, or become

[* The horns of the sheep are concave, turned backwards, and full of wrinkles; those of the goat are hollow, but turned upwards, erect, and scabrous. Both animals have eight fore-teeth in the under jaw, but none in the upper; and they have no dog-teeth. The male goat has a long beard.]

the possession only of the lowest of the people. The sheep, therefore, and its varieties, may be considered first; and the goat, with all those of its kind, will then properly follow.

THE SHEEP.

Those animals that take refuge under the protection of man, in a few generations become indolent and helpless. Having lost the habit of self-defence, they seem to lose also the instincts of nature. The sheep, in its present domestic state, is of all animals the most defenceless and inoffensive. With its liberty it seems to have been deprived of its swiftness and cunning; and what in the ass might rather be called patience, in the sheep appears to be stupidity. With no one quality to fit it for self-preservation, it makes vain efforts at all. Without swiftness, it endeavours to fly; and without strength, sometimes offers to oppose. But these feeble attempts rather incite than repress the insults of every enemy; and the dog follows the flock with greater delight upon seeing them fly, and attacks them with more fierceness upon their unsupported attempts at resistance. Indeed they run together in flocks rather with the hopes of losing their single danger in the crowd, than of uniting to repress the attack by numbers. The sheep, therefore, were it exposed in its present state to struggle with its natural enemies of the forest, would soon be ex-

tirpated. Loaded with a heavy fleece, deprived of the defence of its horns, and rendered heavy, slow, and feeble, it can have no other safety than what it finds from man. This animal is now, therefore, obliged to rely solely upon that art for protection, to which it originally owes its degradation.

But we are not to impute to nature the formation of an animal so utterly unprovided against its enemies, and so unfit for defence. The Moufflon, which is the sheep in a savage state, is a bold fleet creature, able to escape from the greater animals by its swiftness, or to oppose the smaller kinds with the arms it has received from nature. It is by human art alone that the sheep has become the tardy defenceless creature we find it. Every race of quadrupeds might easily be corrupted by the same allurements by which the sheep has been thus debilitated and depressed. While undisturbed, and properly supplied, none are found to set any bounds to their appetite. They all pursue their food while able, and continue to graze till they often die of disorders occasioned by too much fatness. But it is very different with them in a state of nature: they are in the forest surrounded by dangers, and alarmed with unceasing hostilities; they are pursued every hour from one tract of country to another, and spend a great part of their time in attempts to avoid their enemies. Thus constantly exercised, and continually practising all the arts of defence and escape, the animal at once preserves its life and native

independence, together with its swiftness, and the slender agility of its form.

The sheep in its servile state seems to be divested of all inclinations of its own, and of all animals it appears the most stupid. Every quadruped has a peculiar turn of countenance, a physiognomy, if we may so call it, that generally marks its nature. The sheep seems to have none of those traits that betoken either courage or cunning; its large eyes, separated from each other, its ears sticking out on each side, and its narrow nostrils, all testify the extreme simplicity of this creature; and the position of its horns also shows that nature designed the sheep rather for flight than combat. It appears a large mass of flesh, supported upon four small straight legs, ill fitted for carrying such a burden; its motions are awkward, it is easily fatigued, and often sinks under the weight of its own corpulency. In proportion as these marks of human transformation are more numerous, the animal becomes more helpless and stupid. Those which live upon a more fertile pasture, and grow fat, become entirely feeble; those that want horns are found more dull and heavy than the rest;* those whose fleeces are longest and finest are more subject to a variety of disorders; and, in short, whatever changes have been wrought in this animal by the industry of man, are entirely calculated for human advantage, and not for that of the creature itself. It might require a succession of ages before the sheep

* Daubenton upon the Sheep.

could be restored to its primitive state of activity, so as to become a match for its pursuers of the forest.

The goat, which it resembles in so many other respects, is much its superior. The one has its particular attachments, sees danger, and generally contrives to escape it; but the other is timid without a cause, and secure when real danger approaches. Nor is the sheep, when bred up tame in the house, and familiarized with its keepers, less obstinately absurd: from being dull and timid, it then acquires a degree of pert familiarity; butts with its head, becomes mischievous, and shows itself every way unworthy of being singled out from the rest of the flock. Thus it seems rather formed for slavery than friendship, and framed more for the necessities than the amusements of mankind. There is but one instance in which the sheep shows any attachment to its keeper, and that is seen rather on the continent than among us in Great Britain. What I allude to is, their following the sound of the shepherd's pipe. Before I had seen them trained in this manner, I had no conception of those descriptions in the old pastoral poets, of the shepherd leading his flock from one country to another. As I had been used only to see these harmless creatures driven before their keepers, I supposed that all the rest was but invention; but in many parts of the Alps, and even some provinces of France, the shepherd and his pipe are still continued with true antique simplicity. The flock is regularly penned every evening, to preserve

them from the wolf; and the shepherd returns homeward at sun-set, with his sheep following him, and seemingly pleased with the sound of the pipe, which is blown with a reed, and resembles the chanter of the bagpipe. In this manner, in those countries that still continue poor, the Arcadian life is preserved in all its former purity; but in countries where a greater inequality of conditions prevail, the shepherd is generally some poor wretch who attends a flock from which he is to derive no benefits, and only guards those luxuries which he is not fated to share.

It does not appear, from early writers, that the sheep was bred in Britain; and it was not till several ages after this animal was cultivated, that the woollen manufacture was carried on among us.* That valuable branch of business lay for a considerable time in foreign hands, and we were obliged to import the cloth manufactured from our own materials. There were, notwithstanding, many unavailing efforts among our kings to introduce and preserve the manufactory at home. Henry the Second, by a patent granted to the weavers in London, directed, that if any cloth was found made of a mixture of Spanish wool, it should be burned by the mayor. Such edicts, at length, although but slowly, operated towards the establishing this trade among us. The Flemings, who, at the revival of arts, possessed the art of cloth-working in a superior degree, were invited to settle here; and, soon after, foreign cloth was

* British Zoology, vol. i. p. 23.

prohibited from being worn in England. In the times of Queen Elizabeth this manufacture received every encouragement; and many of the inhabitants of the Netherlands being then forced, by the tyranny of Spain, to take refuge in this country, they improved us in those arts in which we at present excel the rest of the world. Every art, however, has its rise, its meridian, and its decline; and it is supposed by many, that the woollen manufacture has for some time been decaying amongst us. The cloth now made is thought to be much worse than that of some years past; being neither so firm nor so fine, neither so much courted abroad nor so serviceable at home.

No country, however, produces such sheep as England, either with larger fleeces, or better adapted for the business of clothing. Those of Spain, indeed, are finer, and we generally require some of their wool to work up with our own; but the weight of a Spanish fleece is no way comparable to one of Lincoln or Warwickshire; and in those counties it is no uncommon thing to give a hundred guineas for a ram.

The sheep without horns are counted the best sort, because a great part of the animal's nourishment is supposed to go up into the horns.* Sheep, like other ruminant animals, want the upper foreteeth, but have eight in the lower jaw; two of these drop, and are replaced at two years old, four of them are replaced at three years old, and all at four. The new teeth are easily known

* Lisle's Husbandry, vol. ii. p. 155.

from the rest, by their freshness and whiteness. There are some breeds, however, in England, that never change their teeth at all: these the shepherds call the *leather-mouthed cattle;* and, as their teeth are thus longer wearing, they are generally supposed to grow old a year or two before the rest.* The sheep brings forth one or two at a time, and sometimes three or four. The first lamb of an ewe is generally pot-bellied, short and thick, and of less value than those of a second or third production, the third being supposed the best of all. They bear their young five months; and, by being housed, they bring forth at any time of the year.

But this animal, in its domestic state, is too well known to require a detail of its peculiar habits, or of the arts which have been used to improve the breed. Indeed, in the eye of an observer of nature, every art which tends to render the creature more helpless and useless to itself, may be considered rather as an injury than an improvement; and if we are to look for this animal in its noblest state, we must seek for it in the African desert or the extensive plains of Siberia. Among the degenerate descendants of the wild sheep there have been so many changes wrought, as entirely to disguise the kind, and often to mislead the observer. The variety is so great, that scarcely any two countries have their sheep of the same kind; but there is found a manifest difference in all, either in the size, the covering, the shape, or the horns.

* Lisle's Husbandry, vol. ii. p. 155.

The woolly sheep,* as it is seen among us, is found only in Europe, and some of the temperate provinces of Asia. When transported into warmer countries, either into Florida or Guinea, it loses its wool, and assumes a covering fitted to the climate, becoming hairy and rough; it there also loses its fertility, and its flesh no longer has the same flavour. In the same manner, in the very cold countries it seems equally helpless and a stranger; it still requires the unceasing attention of mankind for its preservation; and although it is found to subsist as well in Greenland as in Guinea,† yet it seems a natural inhabitant of neither.

Of the domestic kinds to be found in the different parts of the world, besides our own, which is common in Europe, the first variety is to be seen in Iceland, Muscovy, and the coldest climates of the north. This, which may be called the Iceland sheep, resembles our breed in the form of the body and the tail, but differs in a very extraordinary manner in the number of the horns, being generally found to have four, and sometimes even eight, growing from different parts of the forehead. These are large and formidable, and the animal seems thus fitted by nature for a state of war; however, it is of the nature of the rest of its kind, being mild, gentle, and timid. Its wool is very different also from that of the common sheep, being long, smooth, and hairy. Its colour is of a dark brown, and under its outward coat of

* Buffon, vol. xxiii. p. 168. † Crantz.

hair it has an internal covering, that rather resembles fur than wool, being fine, short, and soft.

The second variety to be found in this animal is that of the broad-tailed sheep, so common in Tartary, Arabia, Persia, Barbary, Syria, and Egypt. This sheep is only remarkable for its large and heavy tail, which is often found to weigh from twenty to thirty pounds. It sometimes grows a foot broad, and is obliged to be supported by a small kind of board that goes upon wheels. This tail is not covered underneath with wool, like the upper part, but is bare; and the natives, who consider it as a very great delicacy, are very careful in attending and preserving it from injury. M. Buffon supposes that the fat which falls into the caul in our sheep, goes in these to furnish the tail, and that the rest of the body is from thence deprived of fat in proportion. With regard to their fleeces in the temperate climates, they are, as in our own breed, soft and woolly, but in the warmer latitudes they are hairy; yet in both they preserve the enormous size of their tails.

The third observable variety is that of the sheep called *Strepsicheros*. This animal is a native of the islands of the Archipelago, and only differs from our sheep in having straight horns, surrounded with a spiral furrow.

The last variety is that of the Guinea sheep, which is generally found in all the tropical climates, both of Africa and the East Indies. They are of a large size, with a rough hairy skin, short horns, and ears hanging down, with a kind of

dewlap under the chin. They differ greatly in form from the rest, and might be considered as animals of another kind, were they not known to breed with other sheep. These, of all the domestic kinds, seem to approach the nearest to the state of nature. They are larger, stronger, and swifter than the common race, and consequently better fitted for the precarious forest life. However, they seem to rely, like the rest, on man for support, being entirely of a domestic nature, and subsisting only in the warmer climates.

Such are the varieties of this animal which have been reduced into a state of domestic servitude. These are all capable of producing among each other; all the peculiarities of their form have been made by climate and human cultivation; and none of them seem sufficiently independent to live in a state of savage nature. They are, therefore, to be considered as a degenerate race, formed by the hand of man, and propagated merely for his benefit. At the same time, while man thus cultivates the domestic kinds, he drives away and destroys the savage race, which are less beneficial and more headstrong. These, therefore, are to be found in but a very small number in the most uncultivated countries, where they have been able to subsist by their native swiftness and strength. It is in the more uncultivated parts of Greece, Sardinia, Corsica, and particularly in the deserts of Tartary, that the Moufflon is to be found that bears all the marks of being the primitive race, and that has been actually known to breed with the domestic animal.

The Moufflon, or Musmon, though covered with hair, bears a stronger similitude to the ram than to any other animal: like the ram, it has the eyes placed near the horns, and its ears are shorter than those of the goat; it also resembles the ram in its horns, and in all the particular contours of its form. The horns are alike; they are of a yellow colour; they have three sides, as in the ram, and bent backwards in the same manner behind the ears. The muzzle, and the inside of the ears, are of a whitish colour, tinctured with yellow; the other parts of the face are of a brownish grey. The general colour of the hair over the body is of a brown, approaching to that of the red deer. The inside of the thighs and belly are of a white tinctured with yellow. The form, upon the whole, seems more made for agility and strength than that of the common sheep; and the moufflon is actually found to live in a savage state, and maintain itself, either by force or swiftness, against all the animals that live by rapine. Such is its extreme speed, that many have been inclined rather to rank it among the deer kind than the sheep. But in this they are deceived, as the musmon has a mark that entirely distinguishes it from that species, being known never to shed its horns. In some these are seen to grow to a surprising size, many of them measuring, in their convolutions, above two ells long. They are of a yellow colour, as was said, but the older the animal grows, the darker the horns become: with these they often maintain very furious battles between each other, and sometimes they are found

broken off in such a manner, that the small animals of the forest creep into the cavity for shelter.* When the musmon is seen standing on the plain, his fore-legs are always straight, while his hinder legs seem bent under him; but in cases of more active necessity this seeming deformity is removed, and he moves with great swiftness and agility. The female very much resembles the male of this species, but that she is less, and her horns also are never seen to grow to that prodigious size they are of in the wild ram. Such is the sheep in its savage state, a bold, noble, and even beautiful animal; but it is not the most beautiful creatures that are always found most useful to man. Human industry has therefore destroyed its grace, to improve its utility.

THE GOAT, AND ITS NUMEROUS VARIETIES.

There are some domestic animals that seem as auxiliaries to the more useful sorts, and that, by ceasing to be the first, are considered as nothing. We have seen the services of the ass slighted because inferior to those of the horse, and in the same manner, those of the goat are held cheap, because the sheep so far exceeds it. Were the horse or the sheep removed from nature, the inferior kinds would then be invaluable; and the same arts would probably be bestowed in per-

* Gmelin, as quoted by Buffon.

fecting their kinds, that the higher order of animals have experienced. But in their present neglected state, they vary but little from the wild animals of the same kind: man has left them their primitive habits and forms, and the less they owe to his assiduity, the more they receive from nature.

The goat seems, in every respect, more fitted for a life of savage liberty than the sheep.* It is naturally more lively, and more possessed with animal instinct. It easily attaches itself to man, and seems sensible of his caresses. It is also stronger and swifter, more courageous, and more playful, lively, capricious, and vagrant; it is not easily confined to its flock, but chooses its own pastures, and loves to stray remote from the rest. It chiefly delights in climbing precipices, in going to the very edge of danger; it is often seen suspended upon an eminence hanging over the sea, upon a very little base, and even sleeps there in security. Nature has, in some measure, fitted it for traversing these declivities with ease; the hoof is hollow underneath, with sharp edges, so that it walks as securely on the ridge of a house as on the level ground. It is a hardy animal, and very easily sustained; for which reason it is chiefly the property of the poor, who have no pastures with which to supply it. Happily, however, it seems better pleased with the neglected wild than the cultivated fields of art; it chooses the heathy mountain, or the shrubby rock; its

* Buffon.

favourite food is the tops of the boughs, or the tender bark of young trees; it seems less afraid of immoderate heat, and bears the warm climates better than the sheep; it sleeps exposed to the sun, and seems to enjoy its warmest fervours; neither is it terrified at the storm, or incommoded by the rain; immoderate cold alone seems to affect it, and is said to produce a vertigo, with which this animal is sometimes incommoded. The inconstancy of its nature is perceivable in the irregularity of its gait; it goes forward, stops, runs, approaches, flies, merely from caprice, and with no other seeming reason than the extreme vivacity of its disposition.

There are proofs of this animal's being naturally the friend of man, and that the goat seldom resumes its primeval wildness when once reduced into a state of servitude. In the year 1698, an English vessel happening to touch at the islands of Bonavista, two Negroes came, and offered the sailors as many goats as they chose to take away. Upon the captain's expressing his astonishment at this offer, the Negroes assured him that there were but twelve persons in the island, and that the goats were multiplied in such a manner as even to become a nuisance: they added, that instead of giving any trouble to catch them, they followed the few inhabitants that were left with a sort of obstinacy, and rather became importunate with their tameness.

The goat produces but two at a time, and three at the most. But in the warmer climates, although the animal degenerates, and grows less,

yet it becomes more fruitful, being generally found to bring forth three, four, and five at a single delivery. The buck is capable of propagating at the age of one year, and the female at seven months: however, the fruits of this premature generation are weak and defective; and their best breeding time is generally delayed till the age of two years, or eighteen months at least. One buck is sufficient for a hundred and fifty goats: his appetites are excessive; but this ardour brings on a speedy decay, so that he is enervated in four years at most, and even becomes old before he reaches his seventh year. The goat, like the sheep, continues five months with young, and in some places bears twice a-year.

The milk of the goat is sweet, nourishing, and medicinal; not so apt to curdle upon the stomach as that of the cow, and therefore preferable to those whose digestion is but weak. The peculiarity of this animal's food gives the milk a flavour different from that either of the cow or the sheep; for as it generally feeds upon shrubby pastures and heathy mountains, there is an agreeable wildness in the taste, very pleasing to such as are fond of that aliment. In several parts of Ireland, and the Highlands of Scotland, the goat makes the chief possession of the inhabitants. On those mountains where no other useful animal could find subsistence, the goat continues to glean a sufficient living, and supplies the hardy natives with what they consider as varied luxury. They lie upon beds made of their skins, which are soft,

clean, and wholesome; they live upon their milk, with oat bread; they convert a part of it into butter, and some into cheese; the flesh, indeed, they seldom taste of, as it is a delicacy which they find too expensive; however, the kid is considered, even by the city epicure, as a great rarity; and the flesh of the goat, when properly prepared, is ranked by some as no way inferior to venison. In this manner, even in the wildest solitudes, the poor find comforts of which the rich do not think it worth their while to dispossess them: in these mountainous retreats, where the landscape presents only a scene of rocks, heaths, and shrubs, that speak the wretchedness of the soil, these simple people have their feasts, and their pleasures; their faithful flock of goats attends them to these awful solitudes, and furnishes them with all the necessaries of life; while their remote situation happily keeps them ignorant of greater luxury.

As these animals are apt to stray from the flock, no man can attend above fifty of them at a time. They are fattened in the same manner as sheep; but, taking every precaution, their flesh is never so good, or so sweet, in our climate, as that of mutton. It is otherwise between the tropics. The mutton there becomes flabby and lean, while the flesh of the goat rather seems to improve; and in some places the latter is cultivated in preference to the former. We therefore find this animal in almost every part of the world, as it seems fitted for the necessities of man in both extremes. Towards the north, where the pasture is coarse

and barren, the goat is fitted to find a scanty subsistence; between the tropics, where the heat is excessive, the goat is fitted to bear the climate, and its flesh is found to improve.

One of the most remarkable varieties we find in the goat is in that of Natolia. The Natolian goat, or, as M. Buffon calls it, *the goat of Angora*, has the ears longer than ours, and broader in proportion. The male has horns of about the same length with the goat of Europe, but black, and turned very differently, going out horizontally on each side of the head, and twisted round in the manner of a cork-screw. The horns of the female are shorter, and encircle the ear somewhat like those of the ram. They are of a dazzling white colour, and in all the hair is very long, thick, fine, and glossy, which, indeed, is the case with almost all the animals of Syria. There are a great number of these animals about Angora, where the inhabitants drive a trade with their hair, which is sold, either raw or manufactured, into all parts of Europe. Nothing can exceed the beauty of the stuffs which are made from the hair of almost all the animals of that country. These are well known among us by the name of *camlet.*

A second variety is the Assyrian goat of Gesner, which is somewhat larger than ours, with ears almost hanging down to the ground, and broad in proportion. The horns, on the contrary, are not above two inches and a half long, black, and bending a little backwards. The hair is of a fox colour, and under the throat there are two excrescences like the gills of a cock. These

animals are chiefly kept round Aleppo for the sake of their milk. They are driven through the streets, and their milk is sold to the inhabitants as they pass along.

In the third variety may be reckoned the little goat of Africa, which is of the size of a kid, but the hair is as long as that of the ordinary breed. The horns, which do not exceed the length of a man's finger, are thick, and bent downwards so close to the head that they almost enter the skin.

There is an animal of this kind at the Cape of Good Hope, called the blue-goat,* which may be ranked as the fourth variety. It is in shape like the domestic, but much larger, being nearly of the size of a stag. Its hair is very short, and of a delightful blue; but it loses a great deal of its beauty when the animal is dead. It has a very long beard; but the horns are not so long in proportion as in other goats, being turned spirally, in the manner of a cork-screw. It has very long legs, but well proportioned; and the flesh is very well tasted, but lean. For this reason, in that plentiful country it is chiefly killed upon account of its skin. It is a very shy animal, and seldom comes near the Dutch settlements; but they are found in great abundance in the more uncultivated parts of the country. Besides these, they are found in this extensive region of various colours, and many of them are spotted beautifully, with red, white, and brown.

In fine, the Juda goat resembles ours in most parts, except in size, it being much smaller.

* Now generally called the Blue Antelope.

This animal is common in Guinea, Angola, and all along the coast of Africa; it is not much larger than the hare, but it is extremely fat, and its flesh admirably tasted. It is in that country universally preferred to mutton.

These animals seem all of one kind, with very trifling distinctions between them. It is true that they differ in some respects, such as having neither the same colour, hair, ears, or horns. But it ought to be considered as a rule in natural history, that neither the horns, the colour, the fineness, or the length of the hair, nor the position of the ears, are to be considered as making an actual distinction in the kinds. These are accidental varieties, produced by climate and food, which are known to change even in the same animal, and give it a seeming difference of form. When we see the shapes, the inclinations, and the internal conformation of seemingly different creatures nearly the same; and, above all, when we see them producing among each other, we then have no hesitation in pronouncing the species, and asserting that these are of the goat kind, with which they are so materially connected.

But although these are evidently known to belong to the goat kind, there are others nearly resembling the goat, of whose kindred we cannot be equally certain. These are such as, being found in a state of nature, have not as yet been sufficiently subjected to human observation. Hence it is impossible to determine with precision to which class they belong; whether they

be animals of a particular kind, or merely the goat in its state of savage freedom. Were there but one of these wild animals, the inquiry would soon be ended, and we might readily allow it for the parent stock; but in the present case there are two kinds that have almost equal pretensions to this honour, and the claims of which it has been found difficult to determine. The animals in question are the Chamois and the Ibex. These both bear very near approaches to the goat in figure; have horns that never shed; and, at the same time, are more different from each other than from the animal in question. From which of these two sources our domestic goat is derived, is not easy to settle. Instead, therefore, of entering into the discussion, I will content myself with the result of M. Buffon's inquiries. He is of opinion that the ibex is the principal source, that our domestic goat is the immediate descendant, and that the chamois is but a variety from that stock, a sort of collateral branch of the same family. His principal reason for giving the preference to the ibex, is its having a more masculine figure, large horns, and a large beard; whereas the chamois wants these marks of primitive strength and wildness. He supposes, therefore, in their original savage state, that our goat has taken after the male of the parent stock, and the chamois after the female; and that this has produced a variety in these animals, even before they underwent human cultivation.

However this be, the two animals in question seem both well fitted for their precarious life, be-

ing extremely swift, and capable of running with ease along the ledges of precipices, where even the wolf or the fox, though instigated by hunger, dare not pursue them. They are both natives of the Alps, the Pyrenees, and the mountains of Greece; there they propagate in vast numbers, and continue to exist, in spite of the hunter, and every beast of prey that is found incessantly to pursue them.

The ibex resembles the goat in the shape of its body, but differs in the horns, which are much larger. They are bent backward, full of knots; and it is generally asserted that there is a knot added every year. There are some of these found, if we can believe Bellonius, at least two yards long. The ibex has a large black beard, is of a brown colour, with a thick warm coat of hair. There is a streak of black runs along the top of the back, and the belly and back of the thighs are of a fawn colour.

The chamois,* though a wild animal, is very easily tamed, and docile, and to be found only in rocky and mountainous places. It is about the size of a domestic goat, and resembles one in many respects. It is most agreeably lively, and active beyond expression. The chamois's hair is short, like that of the doe; in spring it is of an ash colour, in autumn a dun colour, inclining to black, and in winter of a blackish-brown. This animal is found in great plenty in the mountains of Dauphiny, of Piedmont, Savoy, Switzerland,

* M. Peroud's Account, as quoted by Buffon.

and Germany. They are peaceful gentle creatures, and live in society with each other. They are found in flocks of from four to fourscore, and even a hundred, dispersed upon the crags of the mountains. The large males are seen feeding detached from the rest, except in rutting time, when they approach the females, and drive away the young. The time of their coupling is from the latter end of September to the end of November, and they bring forth in February, March, and April. The young keeps with the dam for about five months, and sometimes longer, if the hunters and the wolves do not separate them. It is asserted that they live between twenty and thirty years. Their flesh is good to eat; and they are found to have ten or twelve pounds of suet, which far surpasses that of the goat in hardness and goodness. The chamois has scarcely any cry, as most animals are known to have; if it has any, it is a kind of feeble bleat, by which the parent calls its young. But in cases of danger, and when it is to warn the rest of the flock, it uses a hissing noise, which is heard at a great distance. For it is to be observed, that this creature is extremely vigilant, and has an eye the quickest and most piercing in nature. Its smell also is not less distinguishing. When it sees its enemy distinctly, it stops for a moment, and then, if the person be near, in an instant after it flies off. In the same manner, by its smell, it can discover a man at half a league distance, and gives the earliest notice. Upon any alarm, therefore, or any apprehensions of danger, the chamois begins his hissing

note with such force, that the rocks and the forests re-echo to the sound. The first hiss continues as long as the time of one inspiration. In the beginning it is very sharp, and deeper towards the close. The animal having, after this first alarm, reposed a moment, again looks round, and perceiving the reality of its fears, continues to hiss by intervals, until it has spread the alarm to a very great distance. During this time it seems in the most violent agitation; it strikes the ground with its fore-foot, and sometimes with both; it bounds from rock to rock; it turns and looks round; it runs to the edge of the precipice; and, still perceiving the enemy, flies with all its speed. The hissing of the male is much louder and sharper than that of the female; it is performed through the nose, and is properly no more than a very strong breath, driven violently through a small aperture. The chamois feeds upon the best herbage, and chooses the most delicate parts of the plants, the flower, and the tender buds. It is not less delicate with regard to several aromatic herbs, which grow upon the sides of the mountains. It drinks but very little while it feeds upon the succulent herbage, and chews the cud in the intervals of feeding. This animal is greatly admired for the beauty of its eyes, which are round and sparkling, and which mark the warmth of its constitution. Its head is furnished with two small horns, of about half a foot long, of a beautiful black, and rising from the forehead almost betwixt the eyes. These, contrary to what they are found in other animals,

instead of going backwards or sideways, jet out forward, and bend a little at their extremities backward, in a small circle, and end in a very sharp point. The ears are placed in a very elegant manner, near the horns; and there are two stripes of black on each side of the face, the rest being of a whitish yellow, which never changes. The horn of this animal is often used as the head of a cane. Those of the female are less, and not so much bent; and some farriers are seen to bleed cattle with them. These animals are so much incommoded by heat, that they are never found in summer, except in the caverns of rocks, amidst fragments of unmelted ice, under the shade of high and spreading trees, or of rough and hanging precipices, that face the north, and which keep off entirely the rays of the sun. They go to pasture both morning and evening, and seldom during the heat of the day. They run along the rocks with great ease and seeming indifference, and leap from one to another, so that no dogs are able to pursue them. There is nothing more extraordinary than to see them climbing and descending precipices, that to all other quadrupeds are inaccessible. They always mount or descend in an oblique direction; they throw themselves down a rock of thirty feet, and light with great security upon some excrescence or fragment, on the side of the precipice, which is just large enough to place their feet upon; they strike the rock, however, in their descent, with their feet, three or four times, to stop the velocity of their motion; and, when they have got upon their base below,

they at once seem fixed and secure. In fact, to see them jump in this manner, they seem rather to have wings than legs; some, indeed, pretend to say that they use their horns for climbing, but this wants confirmation. Certain it is that their legs alone are formed for this arduous employment, the hinder being rather longer than the former, and bending in such a manner, that when they descend upon them, they break the force of the fall. It is also asserted, that when they feed, one of them always stands as sentinel; but how far this may be true is questionable. For certain, while they feed, there are some of them that keep continually gazing round the rest; but this is practised among all gregarious animals, so that, when they see any danger, they warn the rest of the herd of its approach. During the rigours of winter the chamois sleeps in the thicker forests, and feeds upon the shrubs and the buds of the pine tree. It sometimes turns up the snow with its foot to look for herbage, and where it is green makes a delicious repast. The more craggy and uneven the forest, the more this animal is pleased with the abode, which thus adds to its security. The hunting the chamois is very laborious, and extremely difficult. The most usual way is to hide behind the clefts of the rocks, and shoot them. This, however, must be done with great precaution; the sportsman must creep for a vast way upon his belly, in silence, and take also the advantage of the wind, which if it blow from him they would instantly perceive. When arrived at a proper distance, he then advances his piece,

which is to be rifle-barrelled, and to carry one ball, and tries his fortune among them. Some also pursue this animal as they do the stag, by placing proper persons at all the passages of a glade, or valley, and then sending in others to rouse the game. Dogs are quite useless in this chase, as they rather alarm than overtake. Nor is it without danger even to the men; for it often happens that when the animal finds itself overpressed, it drives at the hunter with its head, and often tumbles him down the neighbouring precipice. This animal cannot go upon ice when smooth; but if there be the least inequalities on its surface, it then bounds along in security, and quickly evades all pursuit.

The skin of the chamois was once famous when tanned for its softness and warmth; at present, however, since the art of tanning has been brought to greater perfection, the leather called *shammoy* is made also from those of the tame goat, the sheep, and the deer. Many medicinal virtues also were said to reside in the blood, fat, gall, and the concretion sometimes found in the stomach of this animal, called the *German bezoar*. The fat, mixed with milk, was said to be good in ulcers of the lungs. The gall was said to be useful in strengthening the sight; the stone, which is generally about the size of a walnut, and blackish, was formerly in great request for having the same virtues with oriental bezoar. However, in the present enlightened state of physic, all these medicines are quite out of repute; and although we have the names of several medicines procurable from

quadrupeds, yet, except the musk or hartshorn alone, I know of none in any degree of reputation. It is true, the fat, the urine, the beak, and even the dung of various animals, may be found efficacious, where better remedies are not to be had; but they are far surpassed by many at present in use, whose operations we know, and whose virtues are confirmed by repeated experience.

Such are the quadrupeds that more peculiarly belong to the goat kind. Each of these, in all probability, can engender and breed with the other; and were the whole race extinguished except any two, these would be sufficient to replenish the world, and continue the kind. Nature, however, proceeds in her variations by slow and insensible degrees, and scarcely draws a firm distinguished line between any two neighbouring races of animals whatsoever. Thus it is hard to discover where the sheep ends and the goat begins; and we shall find it still harder to fix precisely the boundaries between the goat kind and the deer. In all transitions from one kind to the other, there is to be found a middle race of animals, that seem to partake of the nature of both, and that can precisely be referred to neither. That race of quadrupeds called the *Gazelles* are of this kind; they are properly neither goat nor deer, and yet they have many of the marks of both—they make the shade between these two kinds, and fill up the chasm in nature.

THE GAZELLES.

The Gazelles, of which there are several kinds, can with propriety be referred neither to the goat nor the deer, and yet they partake of both natures. Like the goat, they have hollow horns that never fall, which is otherwise in the deer; they have a gall-bladder, which is found in the goat, and not in the deer; and, like that animal, they feed rather upon shrubs than grassy pasture. On the other hand, they resemble the roebuck in size and delicacy of form; they have deep pits under the eyes like that animal; they resemble the roebuck in the colour and nature of their hair; they resemble him in the bunches upon their legs, which only differ in being upon the fore-legs in these, and on the hind-legs in the other. They seem, therefore, to be of a middle nature between these two kinds; or to speak with greater truth and precision, they form a distinct kind by themselves.*

The distinguishing marks of this tribe of animals, by which they differ both from the goat and the deer, are these: their horns are made differently, being annulated or ringed round, at the same time that there are longitudinated depressions running from the bottom to the point. They have bunches of hair upon their fore-legs; they have a streak of black, red, or brown, running along the lower part of their sides, and three

[* This tribe of animals is now generally distinguished by the common name of *Antelope*.]

streaks of whitish hair in the internal side of the ear. These are characters that none of them are without: besides these, there are others which in general they are found to have, and which are more obvious to the beholder. Of all animals in the world, the gazelle has the most beautiful eye, extremely brilliant, and yet so meek, that all the eastern poets compare the eyes of their mistresses to those of this animal. A gazelle-eyed beauty is considered as the highest compliment that a lover can pay; and indeed the Greeks themselves thought it no inelegant piece of flattery to resemble the eyes of a beautiful woman to those of a cow. The gazelle, for the most part, is more delicately and finely limbed than even the roebuck; its hair is as short, but finer and more glossy. Its hinder legs are longer than those before, as in the hare, which gives it greater security in ascending or descending steep places. Their swiftness is equal, if not superior to that of the roe; but as the latter bounds forward, so these run along in an even uninterrupted course. Most of them are brown upon the back, white under the belly, with a black stripe separating those colours between. Their tail is of various lengths, but in all covered with pretty long hair; and their ears are beautiful, well placed, and terminating in a point. They all have a cloven hoof, like the sheep; they all have permanent horns, and the female has them smaller than the male.

Of these animals M. Buffon makes twelve varieties, which, however, is much fewer than what other naturalists have made them. The first is

the *Gazella*, properly so called, which is of the size of the roebuck, and very much resembling it in all the proportions of its body, but entirely differing, as was said, in the nature and fashion of the horns, which are black and hollow like those of the ram or the goat, and never fall. The second he calls the *Kevel*, which is rather less than the former; its eyes also seem larger; and its horns, instead of being round, are flatted on the sides, as well in the male as the female. The third he calls the *Corin*, which very much resembles the two former, but that it is still less than either. Its horns also are smaller in proportion, smoother than those of the other two, and the annular prominences belonging to the kind are scarcely discernible, and may be rather called wrinkles than prominences. Some of these animals are often seen streaked like the tiger. These three are supposed to be of the same species. The fourth he calls the *Zeiran*, the horns only of which he has seen; which, from their size, and the description of travellers, he supposes to belong to a larger kind of the gazelle, found in India and Persia under that denomination.

The fifth he calls the *Koba*, and the sixth the *Kob;* these two differ from each other only in size, the former being much larger than the latter. The muzzle of these animals is much longer than those of the ordinary gazelle; the head is differently shaped, and they have no depressions under the eyes. The seventh he calls after its Egyptian name, the *Algazel;* which is shaped pretty much like the ordinary gazelle,

except that the horns are much longer, being generally three feet from the point to the insertion, whereas in the common gazelle they are not above a foot; they are smaller also and straighter, till near the extremities, when they turn short, with a very sharp flexure; they are black and smooth, and the annular prominences are scarcely observable. The eighth is called the *Pazan*, or, by some, the *Bezoar Goat;* which greatly resembles the former, except a small variety in their horns; and also with this difference, that as the algazel feeds upon the plains, this is only found in the mountains. They are both inhabitants of the same countries and climate, being found in Egypt, Arabia, and Persia. This last is the animal famous for that concretion in the intestines or stomach, called the *Oriental Bezoar*, which was once in such repute all over the world for its medicinal virtues. The word *bezoar* is supposed to take its name either from the pazan or pazar, which is the animal that produces it, or from a word in the Arabic language which signifies *antidote* or *counter-poison*. It is a stone of a glazed blackish colour, found in the stomach or the intestines of some animal, and brought over to us from the East Indies. Like all other animal concretions, it is found to have a kind of nucleus or hard substance within, upon which the external coatings were formed; for, upon being cut through, it is seen to have layer over layer, as in an onion. This nucleus is of various kinds; sometimes the buds of a shrub, sometimes a piece of stone, and sometimes a

marcasite. This stone is from the size of an acorn to that of a pigeon's egg; the larger the stone, the more valuable it is held, its price increasing like that of a diamond. There was a time when a stone of four ounces sold in Europe for above two hundred pounds; but at present the price is greatly fallen, and they are in very little esteem. The bezoar is of various colours; sometimes of a blood colour, sometimes of a pale yellow, and of all the shades between these two. It is generally glossy, smooth, and has a fragrant smell, like that of ambergris, probably arising from the aromatic vegetables upon which the animal that produces it feeds. It has been given in vertigoes, epilepsies, palpitations of the heart, cholic, jaundice, and, in those places where the dearness and not the value of medicines is consulted, in almost every disorder incident to man. In all, perhaps, it is equally efficacious, acting only as an absorbent powder, and possessing virtues equal to common chalk, or crab's claws. Judicious physicians have therefore discarded it; and this celebrated medicine is now chiefly consumed in countries where the knowledge of nature has been but little advanced. When this medicine was in its highest reputation, many arts were used to adulterate it, and many countries endeavoured to find out a bezoar of their own. Thus we had occidental bezoar, brought from America; German bezoar, which has been mentioned before; cow bezoar, and monkey bezoar. In fact, there is scarcely an animal, except of the carnivorous kinds, that does not produce

some of these concretions in the stomach, intestines, kidneys, bladder, and even in the heart. To these, ignorance may impute virtues that they do not possess; experience has found but few cures wrought by their efficacy; but it is well known that they often prove fatal to the animal that bears them. These concretions are generally found in cows, by their practice of licking off their hair, which gathers in the stomach into the shape of a ball, acquires a surprising degree of hardness, and sometimes a polish like leather. They are often as large as a goose egg; and, when become too large to pass, block up the passage of the food, and the animal dies. The substance of these balls, however, is different from the bezoar mentioned above, being rather a concretion of hair than of stone. There is a bezoar found in the gall-bladder of a boar, and thence called hog bezoar, in very great esteem; but perhaps with as little justice as any of the former. In short, as we have already observed, there is scarcely an animal, or scarcely a part of their bodies, in which concretions are not formed; and it is more than probable, as M. Buffon justly remarks, that the bezoar so much in use formerly was not the production of the pazar, or any one animal only, but that of the whole gazelle kind; who, feeding upon odoriferous herbs and plants, gave this admirable fragrance to the accidental concretions which they were found to produce. As this medicine, however, is but little used at present, our curiosity is much abated as to the cause of its formation. To return, therefore, to

the varieties in the gazelle tribe, the ninth is called the *Ranguer*, and is a native of Senegal. This differs somewhat in shape and colour from the rest; but particularly in the shape of its horns, which are straight to near the points, where they crook forward, pretty much in the same manner as in the chamois they crook backward. The tenth variety of the gazelle is the *Antelope*, so well known to the English, who have given it the name. This animal is of the size of a roebuck, and resembles the gazelle in many particulars, but differs in others: it has deeper eye-pits than the former; the horns are formed differently also, being about sixteen inches long, almost touching each other at the bottom, and spreading as they rise, so as at their tips to be sixteen inches asunder. They have the annular prominences of their kind, but not so distinguishable as in the gazelle; however, they have a double flexure, which is very remarkable, and serves to distinguish them from all others of their kind. At the root they have a tuft of hair, which is longer than that of any part of the body. Like others of the same kind, the antelope is brown on the back, and white under the belly; but these colours are not separated by the black streak which is to be found in all the rest of the gazelle kinds. There are different sorts of this animal, some with larger horns than others, and others with less. The one which makes the eleventh variety in the gazelle kind, M. Buffon calls the *Lidme*, which has very long horns; and the other, which is the twelfth and

last, he calls the *Indian Antelope*, the horns of which are very small.

To these may be added three or four varieties more, which it is not easy to tell whether to refer to the goat or the gazelle, as they equally resemble both. The first of these is the *Bubalus*, an animal that seems to partake of the mixed natures of the cow, the goat, and the deer. It resembles the stag in the size and the figure of its body, and particularly in the shape of its legs. But it has permanent horns like the goat, and made entirely like those of the gazelle kind. It also resembles that animal in its way of living; however, it differs in the make of its head, being exactly like the cow in the length of its muzzle, and in the disposition of the bones of its skull, from which similitude it has taken its name. This animal has a narrow long head; the eyes are placed very high; the forehead short and narrow; the horns permanent, about a foot long, black, thick, annulated, and the rings of the gazelle kind remarkably large; its shoulders are very high, and it has a kind of bunch on them that terminates at the neck; the tail is about a foot long, and tufted with hair at the extremity. The hair of this animal is remarkable in being thicker at the middle than at the root: in all other quadrupeds, except the elk and this, the hair tapers off from the bottom to the point; but in these, each hair seems to swell in the middle like a nine-pin. The bubalus also resembles the elk in size, and the colour of its skin; but these are the only similitudes between them: as the one has a very large

branching head of solid horns that are naturally deciduous, the other has black, unbranching, hollow horns, that never fall. The bubalus is common enough in Barbary, and has often been called by the name of the *Barbary Cow*, from which animal it differs so widely. It partakes pretty much of the nature of the antelope; like that having the hair short, the hide black, the ears pointed, and the flesh good for food.

The second anomalous animal of the goat kind M. Buffon calls the *Condoma*. It is supposed to be equal in size to the largest stag, but with hollow horns like those of the goat kind, and with varied flexures like those of the antelope. They are above three feet long, and at their extremities about two feet asunder. All along the back there runs a white list, which ends at the insertion of the tail; another of the same colour crosses this at the bottom of the neck, which it entirely surrounds; there are two more of the same kind running round the body, one behind the forelegs, and the other running parallel to it before the hinder. The colour of the rest of the body is greyish, except the belly, which is white: it has also a long grey beard; and its legs, though long, are well proportioned.

The third that may be mentioned he calls the *Guiba*. It resembles the gazelles in every particular, except in the colour of the belly, which, as we have seen, is white in them, but in this is of a deep brown. Its horns, also, are not marked with annular prominences, but are smooth and polished. It is also remarkable for white lists,

on a brown ground, that are disposed along the animal's body, as if it were covered with harness. Like the former it is a native of Africa.

The *African Wild Goat* of Grimmius is the fourth. It is of a dark ash colour; and in the middle of the head is a hairy tuft, standing upright: on both sides, between the eyes and the nose, there are very deep cavities, greater than those of the other kinds, which contain a yellow oily liquor, which coagulates into a black substance that has a smell between musk and civet. This being taken away, the liquor again runs out, and coagulates as before. These cavities have no communication with the eyes, and consequently this oozing substance can have nothing of the nature of tears.

[To these may be added the *Chevrotin*, or Pigmy Antelope. This beautiful species appears to have been frequently confounded with the Pigmy Musk, which it resembles in size, as well as in colour and manners. It is a native of the hottest parts of Africa, and being completely formed like a stag in miniature, it has been sometimes called the Little Guinea Deer. It is easily tamed, but of so tender a nature as not to admit of being brought alive into Europe. So remarkable are its powers of activity in its native regions, that it is said to be able to leap over a wall of twelve feet in height. Its colour is a bright bay, paler beneath, and on the insides of the limbs; its height not more than eight inches, and about twelve from the point of the nose to the insertion of the tail. The horns are straight, short, strong,

sharp pointed, smooth, and perfectly black. The legs are scarcely thicker than a quill, and have been frequently capped at the upper joint with gold or silver, and in that state used by way of tobacco stoppers. The female has no horns.]*

Such is the list of the gazelles, all which pretty nearly resemble the deer in form and delicacy of shape, but have the horns hollow, single, and permanent, like those of the goat. They properly fill up, as has been already observed, the interval between these two kinds of animals; so that it is difficult to tell where the goat ends and the deer may be said to begin. If we compare the gazelles with each other, we shall find but very slight distinctions between them. The turn or the magnitude of the horns, the different spots on the skin, or a difference of size in each, are chiefly the marks by which their varieties are to be known; but their way of living, their nature, and their peculiar swiftness, all come under one description.

The gazelles are, in general, inhabitants of the warmer climates, and contribute, among other embellishments, to add beauty to those forests that are for ever green. They are often seen feeding in herds on the sides of the mountains, or in the shade of the woods, and fly all together upon the smallest approaches of danger. They bound with such swiftness, and are so very shy, that dogs or men vainly attempt to pursue them. They traverse those precipices with ease and

* Shaw's Zoology.

safety, which to every quadruped else are quite impracticable; nor can any animals but of the winged kind overtake them. Accordingly, in all those countries where they are chiefly found, they are pursued by falcons; and this admirable manner of hunting makes one of the principal amusements of the upper ranks of people all over the East.

The Arabians, Persians, and Turks, breed up for this purpose that kind of hawk called the *Falcon Gentle*, with which, when properly trained, they go forth on horseback among the forests and the mountains, the falcon perching upon the hand of the hunter. Their expedition is conducted with profound silence; their dogs are taught to hang behind, while the men, on the fleetest coursers, look round for the game. Whenever they spy a gazelle at the proper distance, they point the falcon to its object, and encourage it to pursue. The falcon, with the swiftness of an arrow, flies to the animal; that, knowing its danger, endeavours, but too late, to escape. The falcon soon coming up with its prey, fixes its talons, one into the animal's cheek, the other into its throat, and deeply wounds it. On the other hand, the gazelle attempts to escape, but is generally wounded too severely to run far. The falcon clings with the utmost perseverance, nor ever leaves its prey till it falls; upon which the hunters from behind approaching, take up both, and reward the falcon with the blood of the spoil. They also teach the young ones, by applying them to the dead animal's throat, and

accustoming them betimes to fix upon that particular part; for if it should happen that the falcon fixed upon any other part of the gazelle, either its back or its haunches, the animal would easily escape among the mountains, and the hunter would also lose his falcon.

They sometimes also hunt these animals with the ounce. This carnivorous and fierce creature being made tame and domestic, generally sits on horseback behind the hunter, and remains there with the utmost composure, until the gazelle is shown; it is then that it exerts all its arts and fierceness: it does not at once fly at its prey, but approaches slily, turning and winding about until it comes within the proper distance, when all at once it bounds upon the heedless animal, and instantly kills it, and sucks its blood. If, on the other hand, it misses its aim, it rests in its place, without attempting to pursue any farther, but seems ashamed of its own inability.

There is still another way of taking the gazelle, which seems not so certain nor so amusing as either of the former. A tame gazelle is bred up for this purpose, who is taught to join those of its kind wherever it perceives them. When the hunter, therefore, perceives a herd of these together, he fixes a noose round the horns of the tame gazelle, in such a manner that if the rest but touch it, they are entangled; and thus prepared he sends his gazelle among the rest. The tame animal no sooner approaches, but the males of the herd instantly sally forth to oppose him; and, in butting with their horns, are caught in

the noose. In this, both struggling for some time, fall together to the ground; and, at last, the hunter coming up, disengages the one, and kills the other. Upon the whole, however, these animals, whatever be the arts used to pursue them, are very difficult to be taken. As they are continually subject to alarms from carnivorous beasts, or from man, they keep chiefly in the most solitary and inaccessible places, and find their only protection from situations of the greatest danger.

CHAPTER XVII.

THE MUSK ANIMAL.

THE more we search into nature, the more we shall find how little she is known; and we shall more than once have occasion to find, that protracted inquiry is more apt to teach us modesty than to produce information. Although the number and nature of quadrupeds, at first glance, seems very little known, yet, when we come to examine closer, we find some with which we are very partially acquainted, and others that are utterly unknown. There is scarcely a cabinet of the curious but what has the spoils of animals, or the horns or the hoofs of quadrupeds, which do not come within former descriptions. There is scarcely a person whose trade is to dress or improve furs, but knows several creatures by their skins, which

no naturalist has hitherto had notice of. But of all quadrupeds, there is none so justly the reproach of natural historians, as that which bears the musk. This perfume, so well known to the elegant, and so very useful in the hands of the physician, a medicine that has for more than a century been imported from the East in great quantities, and during all that time has been improving in its reputation, is nevertheless so very little understood, that it remains a doubt whether the animal that produces it be a hog, an ox, a goat, or a deer.* When an animal with which

[* This class of quadrupeds is now better known. They have eight small cutting teeth in the lower jaw; in the upper, no cutting or fore-teeth, but two long tusks, one on each side, projecting out of the mouth.

The Thibet Musk has a bag or tumour on the belly, near the navel, and a very short tail almost hid in the fur. The male measures about three feet three inches from the nose to the origin of the tail, and is about two feet three inches high at the shoulder; the female is less than the male, has a sharper nose, has no tusks nor musk-bag, and is provided with two teats. The head resembles that of the roe: the fur is coarse like that of the animals of the deer kind, but softer, very smooth, erect, plentiful, thick, and long; the colour varies according to the age of the animal and time of the year, but is chiefly blackish-brown on the upper, and hoary, seldom white, on the under parts of the body: the hoofs are long, black, and much divided, and the spurious hoofs of the fore-feet are very long. It inhabits the Asiatic Alps, especially the highest rocky mountains from the Altaic chain to that which divides Thibet from India; it is found likewise in China, and in eastern Siberia about lake Baikal and the rivers Jenisea and Argun. The perfume called musk is produced from the male. The bag that contains it is of a somewhat oval figure, flat on one side and rounded on the other, having a small open orifice. In young animals this bag is empty; but in adults it is filled with a clotted, oily, friable matter, of a dark brown colour: this is the true musk, of which each bag contains from a dram and a half to two drams. The best comes from Thibet; that which is produced in Siberia having somewhat of the flavour of castor.

The Americanus, or Brasilian Musk, of a reddish-brown colour, with a black muzzle and white throat, is scarcely so large as a roebuck. The fur is soft and short; the colour of the head and upper part of the neck is dark

we are so nearly connected is so utterly unknown, how little must we know of many that are more remote and unserviceable. Yet naturalists proceed in the same train, enlarging their catalogues and their names, without endeavouring to find out the nature, and fix the precise history of those with which we are very partially acquainted. It is the spirit of the scholars of the present age to be fonder of increasing the bulk of our knowledge than its utility, of extending their conquests than of improving their empire.

The musk which comes to Europe is brought over in small bags, about the size of a pigeon's egg, which, when cut open, appear to contain a kind of dusky reddish substance, like coagulated blood, and which in large quantities has a very

brown; the lower part of the neck and throat is white; the body and limbs are reddish-brown; the hind-legs are longer than the fore. This animal inhabits Guiana and Brasil, and is exceedingly timid, active, and swift. Numbers are frequently seen swimming the rivers, and at that time are easily taken: The Indians hunt them, and their flesh is esteemed very delicate. The French of Guiana call them *biches* or *does*, because, notwithstanding their likeness to deer, both sexes are without horns.

The Indicus, or Indian Musk, has short hair of a tawny colour on the upper, and whitish on the under parts of the body; the tail is short, and the feet have spurious hoofs. It inhabits India, and is much of the same size with the Thibet musk, but the tail is longer and more perceptible, the legs are very slender, and the head resembles that of a horse, with erect oblong ears.

The Meminna, or Ceylon Chevrotin, is in length seventeen inches from the nose to the rump, and of a cinereous olive colour; the throat, breast, and belly, are white; the sides and haunches spotted, and barred transversely with white; the ears are large and open; the tail is very short, and the feet have no spurious hoofs. It inhabits Ceylon and Java.

The Javanicus, or Javan Musk, is of a ferruginous colour on the upper parts of the body, and white all along the under; the tail is long and hairy, white below and at the tip; its legs are similar to those of the pigmy musk, and furnished with very small spurious hoofs. This and the Meminna seem only varieties of the Pigmy Musk. *Vide* p. 298.]

strong smell, but when mixed and diffused becomes a very agreeable perfume. Indeed, no substance now known in the world has a stronger or a more permanent smell. A grain of musk perfumes a whole room, and its odour continues for some days without diminution. But in a larger quantity it continues for years together; and seems scarcely wasted in its weight, although it has filled the atmosphere to a great distance with its parts. It is particularly used in medicine in nervous and hysteric disorders; and is found, in such cases, to be the most powerful remedy now in use: however, the animal that furnishes this admirable medicine has been very variously described, and is known but very imperfectly.

The description given of this animal by Grew is as follows: "The musk animal is properly neither of the goat nor deer kind, for it has no horns, and it is uncertain whether it ruminates or not; however, it wants the fore-teeth in the upper jaw, in the same manner as in ruminating animals, but at the same time it has tusks like those of a hog. It is three feet six inches in length from the head to the tail, and the head is above half a foot long. The fore part of the head is like that of a grey-hound; and the ears are three inches long, and erect, like those of a rabbit; but the tail is not above two inches. It is cloven-footed, like beasts of the goat kind: the hair on the head and legs is half an inch long, on the belly an inch and a half, and on the back and buttocks three inches, and proportionably thicker than in any other animal: it is brown and white alternately

from the root to the point; on the head and thighs it is brown, but under the belly and tail white, and a little curled, especially on the back and belly. On each side of the lower jaw, under the corners of the mouth, there is a tuft of thick hair, which is short and hard, and about three quarters of an inch long. The hair in general of this animal is remarkable for its softness and fine texture: but what distinguishes it particularly are the tusks, which are an inch and a half long, and turn back in the form of a hook; and more particularly the bag which contains the musk, which is three inches long, two broad, and stands out from the belly an inch and a half. It is a very fearful animal, and therefore it has long ears; and the sense of hearing is so quick, that it can discover an enemy at a great distance."

[The Pigmy Musk is a native of many parts of the East Indies and the Indian islands, and is, according to Pennant, so common in Java, that the natives catch great numbers in snares, and carry them to the markets in cages for sale. This elegant little quadruped has been often confounded with some other species, as well as with the pigmy antelope, an animal equally beautiful and diminutive. It is considerably smaller than a domestic cat, measuring only about nine inches from the nose to the tail. It is of a bright bay colour, white beneath, and on the inside of the thighs. Its shape is very beautiful, and the legs are so slender as scarcely to exceed the thickness of a swan's quill: the head is rather large, as are the ears and eyes, and its general aspect pleasing and

mild: there are two tusks in the upper jaw; the tail is about an inch in length; and the feet are remarkable for having no false hoofs, by which this species may be distinguished from the antelope, to which it is similar in size and general appearance. The legs of the pigmy musk, like those of the pigmy antelope, have been frequently capped at the upper joint with gold or silver, and in that state used by way of tobacco-stoppers.]*

After so long and circumstantial a description of this animal, its nature is but very little known; nor has any anatomist as yet examined its internal structure, or been able to inform us whether it be a ruminant animal, or one of the hog kind; how the musk is formed, or whether those bags in which it comes to us be really belonging to the animal, or are only the sophistications of the venders. Indeed, when we consider the immense quantities of this substance which are consumed in Europe alone, not to mention the East, where it is in still greater repute than here, we can hardly suppose that any one animal can furnish the supply, and particularly when it must be killed before the bag can be obtained. We are told, it is true, that the musk is often deposited by the animal upon trees and stones, against which it rubs itself when the quantity becomes uneasy; but it is not in that form which we receive it, but always in what seems to be its own natural blad-

* Shaw's Zoology.

der. Of these Taverner brought home near two thousand in one year; and as the animal is wild, so many must during that space have been hunted and taken. But as the creature is represented very shy, and as it is found but in some particular provinces of the East, the wonder is how its bag should be so cheap, and furnished in such great plenty. The bag in common does not cost (if I do not forget) above a crown by retail, and yet this is supposed the only one belonging to the animal, and for the obtaining of which it must have been hunted and killed. The only way of solving this difficulty, is to suppose that these bags are in a great measure counterfeit, taken from some other animal, or from some part of the same, filled with its blood and a very little of the perfume, but enough to impregnate the rest with a strong and permanent odour. It comes to us from different parts of the East; from China, Tonquin, Bengal, and often from Muscovy: that of Thibet is reckoned the best, and sells for fourteen shillings an ounce; that of Muscovy the worst, and sells but for three, the odour of this, though very strong at first, being quickly found to evaporate.

Musk was some years ago in the highest request as a perfume, and but little regarded as a medicine; but at present its reputation is totally changed, and having been found of great benefit in physic, it is but little regarded for the purposes of elegance. It is thus that things which become necessary cease to continue pleasing; and the

consciousness of their use destroys their power of administering delight.

CHAPTER XVIII.

ANIMALS OF THE DEER KIND.

If we compare the stag and the bull as to shape and form, no two animals can be more unlike; and yet, if we examine their internal structure, we shall find a striking similitude between them. Indeed their differences, except to a nice observer, will scarcely be perceivable. All of the deer kind want the gall-bladder; their kidneys are formed differently; their spleen is also proportionably larger; their tail is shorter; and their horns, which are solid, are renewed every year.† Such are the slight internal discriminations between two animals, one of which is among the swiftest, and the other the heaviest of the brute creation.

The stag is one of those innocent and peaceable animals that seem made to embellish the forest, and animate the solitudes of nature. The easy elegance of his form, the lightness of his motions, those large branches that seem made rather for the ornament of his head than its defence, the size, the strength, and the swiftness of this beautiful creature, all sufficiently rank him

[† These animals have eight fore-teeth in the under jaw, and they have no dog-teeth.]

among the first of quadrupeds, among the most noted objects of human curiosity.

The Stag, or Hart, whose female is called a *hind,* and the young a *calf,* differs in size and in horns from a fallow-deer. He is much larger, and his horns are round, whereas in the fallow kind they are broad and palmated. By these the animal's age is known. The first year the stag has no horns, but a horny excrescence, which is short, rough, and covered with a thin hairy skin. The next year the horns are single and straight; the third year they have two antlers, three the fourth, four the fifth, and five the sixth; this number is not always certain, for sometimes there are more, and often less. When arrived at the sixth year, the antlers do not always increase; and although the number may amount to six or seven on each side, yet the animal's age is then estimated rather from the size of the antlers, and the thickness of the branch which sustains them, than from their variety.

These horns, large as they seem, are notwithstanding shed every year, and new ones come in their place. The old horns are of a firm solid texture, and usually employed in making handles for knives and other domestic utensils. But while young nothing can be more soft or tender; and the animal, as if conscious of his own imbecility at those times, instantly upon shedding his former horns retires from the rest of his fellows, and hides himself in solitudes and thickets, never venturing out to pasture except by night. During this time, which most usually happens in the spring, the new horns are very painful, and have

a quick sensibility of any external impression. The flies also are extremely troublesome to him. When the old horn is fallen off, the new does not begin immediately to appear, but the bones of the skull are seen covered only with a transparent periosteum, or skin, which, as anatomists teach us, covers the bones of all animals. After a short time, however, this skin begins to swell, and to form a soft tumour, which contains a great deal of blood, and which begins to be covered with a downy substance that has the feel of velvet, and appears nearly of the same colour with the rest of the animal's hair. This tumour every day buds forward from the point like the graft of a tree, and rising by degrees from the head, shoots out the antlers on either side, so that in a few days, in proportion as the animal is in condition, the whole head is completed. However, as was said above, in the beginning its consistence is very soft, and has a sort of bark, which is no more than a continuation of the integument of the skull. It is velveted and downy, and every-where furnished with blood-vessels that supply the growing horns with nourishment. As they creep along the sides of the branches, the print is marked over the whole surface; and the larger the blood-vessels, the deeper these marks are found to be: from hence arises the inequality of the surface of the deer's horns, which, as we see, are furrowed all along the sides, the impressions diminishing towards the point, where the substance is as smooth and as solid as ivory. But it ought to be observed, that this substance, of which the horns

are composed, begins to harden at the bottom, while the upper part remains soft, and still continues growing; from whence it appears that the horns grow differently in deer from those of sheep or cows, in which they are always seen to increase from the bottom. However, when the whole head has received its full growth, the extremities then begin to acquire their solidity; the velvet covering, or bark, with its blood-vessels, dry up, and then begin to fall; and this the animal hastens, by rubbing its antlers against every tree it meets. In this manner, the whole external surface being stripped off by degrees, at length the whole head acquires its complete hardness, expansion, and beauty.

It would be a vain task to inquire into the cause of the annual production of these horns; it is sufficient to observe, that if a stag be castrated when its horns are fallen off, they will never grow again; and, on the contrary, if the same operation is performed when they are on, they will never fall off. If only one of his testicles is taken out, he will want the horn on that side; if one of the testicles only be tied up, he will want the horn of the opposite side. The increase of their provision also tends to facilitate the growth and the expansion of the horns; and M. Buffon thinks it possible to retard their growth entirely, by greatly retrenching their food.* As a proof of this, nothing can be more obvious than the difference between a stag bred

* Buffon, vol. xi. p. 113.

in fertile pastures and undisturbed by the hunter, and one often pursued and ill nourished. The former has his head expanded, his antlers numerous, and the branches thick; the latter has but few antlers, the traces of the blood-vessels upon them are but slight, and the expansion but little. The beauty and size of their horns, therefore, mark their strength and their vigour; such of them as are sickly, or have been wounded, never shooting out that magnificent profusion so much admired in this animal. Thus the horns may, in every respect, be resembled to a vegetable substance, grafted upon the head of an animal. Like a vegetable they grow from the extremities; like a vegetable they are for a while covered with a bark that nourishes them; like a vegetable they have their annual production and decay; and a strong imagination might suppose that the leafy productions on which the animal feeds, go once more to vegetate in his horns.*

The stag is usually a twelvemonth old before the horns begin to appear, and then a single branch is all that is seen for the year ensuing. About the beginning of spring, all of this kind are seen to shed their horns, which fall off of themselves; though sometimes the animal assists the efforts of nature, by rubbing them against a tree. It seldom happens that the branches on both sides fall off at the same time, there often being two or three days between the dropping of the one and the other. The old stags usually

* M. Buffon has supposed something like this. *Vide passim.*

shed their horns first, which generally happens towards the latter end of February, or the beginning of March; those of the second head, (namely, such as are between five and six years old), shed their horns about the middle or latter end of March; those still younger, in the month of April; and the youngest of all, not till the middle, or the latter end of May: they generally shed them in pools of water, whither they retire from the heat; and this has given rise to the opinion of their always hiding their horns. These rules, though true in general, are yet subject to many variations; and universally it is known that a severe winter retards the shedding of the horns.

The horns of the stag generally increase in thickness and in height, from the second year of its age to the eighth. In this state of perfection they continue during the vigour of life; but as the animal grows old, the horns feel the impressions of age, and shrink like the rest of the body. No branch bears more than twenty or twenty-two antlers, even in the highest state of vigour; and the number is subject to great variety; for it happens that the stag at one year has either less or more than the year preceding, in proportion to the goodness of his pasture, or the continuance of his security, as these animals seldom thrive when often roused by the hunters. The horns are also found to partake of the nature of the soil; in the more fertile pastures they are large and tender; on the contrary, in the barren soil they are hard, stunted, and brittle.

As soon as the stags have shed their horns, they separate from each other, and seek the plainer parts of the country, remote from every other animal, which they are utterly unable to oppose. They then walk with their heads stooping down, to keep their horns from striking against the branches of the trees above. In this state of imbecility they continue near three months before their heads have acquired their full growth and solidity; and then, by rubbing them against the branches of every thicket, they at length clear them of the skin which had contributed to their growth and nourishment. It is said by some that the horn takes the colour of the sap of the tree against which it is rubbed; and that some thus become red when rubbed against the heath, and others brown by rubbing against the oak: this, however, is a mistake, since stags kept in parks where there are no trees, have a variety in the colour of their horns, which can be ascribed to nothing but nature. —A short time after they have furnished their horns, they begin to feel the impressions of the rut, or the desire of copulation. The old ones are the most forward; and about the end of August, or the beginning of September, they quit their thickets, and return to the mountain in order to seek the hind, to whom they call with a loud tremulous note. At this time their neck is swoln; they appear bold and furious; fly from country to country; strike with their horns against the trees and other obstacles, and continue restless and fierce until they have found the

female, who at first flies from them, but is at last compelled and overtaken. When two stags contend for the same female, how timorous soever they may appear at other times, they then seem agitated with an uncommon degree of ardour. They paw up the earth, menace each other with their horns, bellow with all their force, and striking in a desperate manner against each other, seem determined upon death or victory. This combat continues till one of them is defeated or flies; and it often happens that the victor is obliged to fight several of those battles before it remains undisputed master of the field. The old ones are generally the conquerors upon these occasions, as they have more strength and greater courage: and these also are preferred by the hind to the young ones, as the latter are more feeble and less ardent. However, they are all equally inconstant, keeping to the female but a few days, and then seeking out for another, not to be enjoyed, perhaps, without a repetition of their former danger.

In this manner, the stag continues to range from one to the other for about three weeks, the time the rut continues; during which he scarcely eats, sleeps, or rests, but continues to pursue, to combat, and to enjoy. At the end of this period of madness, for such in this animal it seems to be, the creature that was before so fat, sleek, and glossy, becomes lean, feeble, and timid. He then retires from the herd to seek plenty and repose; he frequents the side of the forest, and chooses the most nourishing pastures, remaining

there till his strength is renewed. Thus is his whole life passed in the alternations of plenty and want, of corpulence and inanition, of health and sickness, without having his constitution much affected by the violence of the change. As he is above five years coming to perfection, he lives about forty years; and it is a general rule, that every animal lives about seven or eight times the number of years which it continues to grow. What, therefore, is reported concerning the life of this animal, has arisen from the credulity of ignorance. Some say, that a stag having been taken in France, with a collar on which were written these words, "Cæsar hoc me donavit," this was interpreted of Julius Cæsar; but it is not considered that Cæsar is a general name for kings, and that one of the emperors of Germany, who are always styled Cæsars, might have ordered the inscription.

This animal may differ in the term of his life, according to the goodness of his pasture, or the undisturbed repose he happens to enjoy. These are advantages that influence not only his age, but his size and his vigour. The stags of the plains, the valleys, and the little hills, which abound in corn and pasture, are much more corpulent and much taller than such as are bred on the rocky waste, or the heathy mountain. The latter are low, small, and meagre, incapable of going so swift as the former, although they are found to hold out much longer. They are also more artful in evading the hunters: their horns are generally black and short, while those of the

lowland stags are reddish and flourishing; so that the animal seems to increase in beauty and stature in proportion to the goodness of the pasture which he enjoys in security.

The usual colour of the stag in England is red; nevertheless, the greater number in other countries are brown. There are some few that are white; but these seem to have obtained this colour in a former state of domestic tameness. Of all the animals that are natives of this climate, there are none that have such a beautiful eye as the stag; it is sparkling, soft, and sensible. His senses of smelling and hearing are in no less perfection. When he is in the least alarmed, he lifts the head and erects the ears, standing for a few minutes as if in a listening posture. Whenever he ventures upon some unknown ground, or quits his native covering, he first stops at the skirt of the plain to examine all around; he next turns against the wind to examine by the smell if there be any enemy approaching. If a person should happen to whistle, or call out at a distance, the stag is seen to stop short in his slow measured pace, and gaze upon the stranger with a kind of awkward admiration: if the cunning animal perceives neither dogs nor fire-arms preparing against him, he goes forward, quite unconcerned, and slowly proceeds without offering to fly. Man is not the enemy he is most afraid of; on the contrary, he seems to be delighted with the sound of the shepherd's pipe; and the hunters sometimes make use of that instrument to allure the poor animal to his destruction.

The stag eats slowly, and is very delicate in the choice of his pasture. When he has eaten a sufficiency, he then retires to the covert of some thicket to chew the cud in security. His rumination, however, seems performed with much greater difficulty than with the cow or sheep; for the grass is not returned from the first stomach without much straining, and a kind of hiccup, which is easily perceived during the whole time it continues. This may proceed from the greater length of his neck, and the narrowness of the passage, all those of the cow and the sheep kind having it much wider.

This animal's voice is much stronger, louder, and more tremulous, in proportion as he advances in age; in the time of rut it is even terrible. At that season he seems so transported with passion that nothing obstructs his fury; and when at bay, he keeps the dogs off with great intrepidity. Some years ago, William Duke of Cumberland caused a tiger and a stag to be enclosed in the same area; and the stag made so bold a defence, that the tiger was at last obliged to fly. The stag seldom drinks in the winter, and still less in the spring, while the plants are tender and covered over with dew. It is in the heat of summer, and during the time of rut, that he is seen constantly frequenting the sides of rivers and lakes, as well to slake his thirst as to cool his ardour. He swims with great ease and strength, and best at those times when he is fattest, his fat keeping him buoyant, like oil upon the surface of the water. During the time of rut he even ventures

out to sea, and swims from one island to another, although there may be some leagues distance between them.

The cry of the hind, or female, is not so loud as that of the male, and is never excited but by apprehension for herself or her young. It need scarcely be mentioned that she has no horns, or that she is more feeble and unfit for hunting than the male. When once they have conceived, they separate from the males, and then they both herd apart. The time of gestation continues between eight and nine months, and they generally produce but one at a time. Their usual season for bringing forth is about the month of May, or the beginning of June, during which they take great care to hide their young in the most obscure thickets. Nor is this precaution without reason, since almost every creature is then a formidable enemy. The eagle, the falcon, the osprey, the wolf, the dog, and all the rapacious family of the cat kind, are in continual employment to find out her retreat. But, what is more unnatural still, the stag himself is a professed enemy, and she is obliged to use all her arts to conceal her young from him as from the most dangerous of her pursuers. At this season, therefore, the courage of the male seems transferred to the female; she defends her young against her less formidable opponents by force; and when pursued by the hunter, she ever offers herself to mislead him from the principal objects of her concern. She flies before the hounds for half the day, and then returns to her young, whose life she has thus pre-

served at the hazard of her own. The *calf*, for so the young of this animal is called, never quits the dam during the whole summer; and in winter, the hind, and all the males under a year old, keep together, and assemble in herds, which are more numerous in proportion as the season is more severe. In the spring they separate; the hinds to bring forth, while none but the year olds remain together: these animals are, however, in general fond of herding and grazing in company; it is danger or necessity alone that separates them.

The dangers they have to fear from other animals, are nothing when compared to those from man. The men of every age and nation have made the chase of the stag one of their most favourite pursuits; and those who first hunted from necessity have continued it for amusement. In our own country, in particular, hunting was ever esteemed as one of the principal diversions of the great.* At first, indeed, the beasts of chase had the whole island for their range, and knew no other limits than those of the ocean.

The Roman jurisprudence, which was formed on the manners of the first ages, established it as a law, that, as the natural right of things which have no master belongs to the first possessor, wild beasts, birds, and fishes, are the property of whosoever could first take them. But the northern barbarians, who overran the Roman empire, bringing with them the strongest relish for this amusement, and being now possessed of more easy

* British Zoology.

means of subsistence from the lands they had conquered, their chiefs and leaders began to appropriate the right of hunting, and, instead of a natural right, to make it a royal one. When the Saxon kings, therefore, had established themselves in a heptarchy, the chases were reserved by each sovereign for his own particular amusement. Hunting and war, in those uncivilized ages, were the only employments of the great. Their active but uncultivated minds were susceptible of no pleasures but those of a violent kind, such as gave exercise to their bodies, and prevented the uneasiness of thinking. But as the Saxon kings only appropriated those lands to the business of the chase which were unoccupied before, so no individuals received any injury. But it was otherwise when the Norman kings were settled upon the throne. The passion for hunting was then carried to an excess, and every civil right was involved in general ruin. This ardour for hunting was stronger than the consideration of religion, even in a superstitious age. The village communities, nay, even the most sacred edifices, were thrown down, and all turned into one vast waste, to make room for animals, the objects of a lawless tyrant's pleasure. Sanguinary laws were enacted to preserve the game; and, in the reigns of William Rufus and Henry the First, it was less criminal to destroy one of the human species than a beast of chase. Thus it continued while the Norman line filled the throne; but when the Saxon line was restored, under Henry the Second, the rigour of the forest laws was soft-

ened. The barons also for a long time imitated the encroachments, as well as the amusements of the monarch; but when property became more equally divided, by the introduction of arts and industry, these extensive hunting grounds became more limited; and as tillage and husbandry increased, the beasts of chase were obliged to give way to others more useful to the community. Those vast tracts of land, before dedicated to hunting, were then contracted; and, in proportion as the useful arts gained ground, they protected and encouraged the labours of the industrious, and repressed the licentiousness of the sportsman. It is, therefore, among the subjects of a despotic government only that these laws remain in full force, where large wastes lie uncultivated for the purpose of hunting, where the husbandman can find no protection from the invasions of his lord, or the continual depredations of those animals which he makes the objects of his pleasure.

In the present cultivated state of this country, therefore, the stag is unknown in its wild natural state; and such of them as remain among us are kept, under the name of *red deer*, in parks among the fallow deer. But they are become less common than formerly;—its excessive viciousness during the rutting season, and the badness of its flesh, inducing most people to part with the species. The few that still remain wild are to be found on the moors that border on Cornwall and Devonshire; and in Ireland, on most of the large mountains of that country.

In England, the hunting the stag and the buck are performed in the same manner; the animal is driven from some gentleman's park, and then hunted through the open country. But those who pursue the wild animal have a much higher object, as well as a greater variety in the chase. To let loose a creature that was already in our possession, in order to catch it again, is, in my opinion, but a poor pursuit, as the reward, when obtained, is only what we before had given away. But to pursue an animal that owns no proprietor, and which he that first seizes may be said to possess, has something in it that seems at least more rational; this rewards the hunter for his toil, and seems to repay his industry. Besides, the superior strength and swiftness of the wild animal prolongs the amusement; it is possessed of more various arts to escape the hunter, and leads him to precipices where the danger ennobles the chase. In pursuing the animal let loose from a park, as it is unused to danger, it is but little versed in the stratagems of escape; the hunter follows as sure of overcoming, and feels none of those alternations of hope and fear which arise from the uncertainty of success. But it is otherwise with the mountain stag: having spent his whole life in a state of continual apprehension; having frequently been followed, and as frequently escaped, he knows every trick to mislead, to confound, or intimidate his pursuers; to stimulate their ardour, and enhance their success.

Those who hunt this animal have their peculiar terms for the different objects of their pursuit.

The professors in every art take a pleasure in thus employing a language known only to themselves, and thus accumulate words which to the ignorant have the appearance of knowledge. In this manner, the stag is called the first year a *calf*, or *hind calf;* the second year, a *knobber;* the third, a *brock;* the fourth, a *staggard;* the fifth, a *stag;* the sixth, a *hart.* The female is called a *hind;* the first year she is a *calf;* the second, a *hearse;* the third, a *hind.* This animal is said to *harbour* in the place where he resides. When he cries, he is said to *bell;* the print of his hoof is called the *slot;* his tail is called the *single;* his excrement the *fumet;* his horns are called his *head;* when simple, the first year they are called *broches;* the third year, *spears;* the fourth year, that part which bears the antlers is called the *beam,* and the little impressions upon its surface, *glitters;* those which rise from the crust of the *beam* are called *pearls.* The antlers also have distinct names: the first that branches off is called the *antler;* the second, the *sur-antler;* all the rest which grow afterwards, till you come to the top, which is called the *crown,* are called *royal antlers.* The little buds about the tops are called *croches.* The impression on the place where the stag has lain, is called the *layer.* If it be in covert or a thicket, it is called his *harbour.* When a deer has passed into a thicket, leaving marks whereby his bulk may be guessed, it is called an *entry.* When they cast their heads, they are said to *mew.* When they rub their heads against trees to bring off the peel of their horns, they are said to *fray.*

When a stag hard hunted takes to swimming in the water, he is said to *go sail;* when he turns his head against the hounds, he is said to *bay;* and when the hounds pursue upon the scent until they have unharboured the stag, they are said to *draw on the slot.*

Such are but a few of the many terms used by hunters in pursuing of the stag, most of which are now laid aside, or in use only among game-keepers. The chase, however, is continued in many parts of the country where the red deer is preserved, and still makes the amusement of such as have not found out more liberal entertainments. In those few places where the animal is perfectly wild, the amusement, as was said above, is superior. The first great care of the hunter, when he leads out his hounds to the mountain side, where the deer are generally known to harbour, is to make choice of a proper stag to pursue. His ambition is to unharbour the largest and the boldest of the whole herd; and for this purpose he examines the track, if there be any, which if he finds long and large, he concludes that it must have belonged to a stag, and not a hind, the print of whose foot is rounder. Those marks also which he leaves on trees, by the rubbing of his horns, show his size, and point him out as the proper object of pursuit. Now to seek out a stag in his haunt, it is to be observed, that he changes his manner of feeding every month. From the conclusion of rutting time, which is November, he feeds in heaths and broomy places. In December they herd together, and withdraw into the

strength of the forests, to shelter themselves from the severe weather, feeding on holm, elder trees, and brambles. The three following months they leave herding, but keep four or five in a company, and venture out to the corners of the forest, where they feed on winter pasture, sometimes making their incursions into the neighbouring corn-fields, to feed upon the tender shoots just as they peep above ground. In April and May they rest in thickets and shady places, and seldom venture forth, unless roused by approaching danger. In September and October their annual ardour returns; and then they leave the thickets, boldly facing every danger, without any certain place for food or harbour. When, by a knowledge of these circumstances, the hunter has found out the residence and the quality of his game, his next care is to uncouple and cast off his hounds in the pursuit: these no sooner perceive the timorous animal that flies before them, but they altogether open in full cry, pursuing rather by the scent than the view, encouraging each other to continue the chase, and tracing the flying animal with the most amazing sagacity. The hunters also are not less ardent in their speed on horseback, cheering up the dogs, and directing them where to pursue. On the other hand, the stag, when unharboured, flies at first with the swiftness of the wind, leaving his pursuers several miles in the rear; and at length, having gained his former coverts, and no longer hearing the cries of the dogs and men that he had just left behind, he stops, gazes round him, and seems to recover his

natural tranquillity. But this calm is of short duration, for his inveterate pursuers slowly and securely trace him along, and he once more hears the approaching destruction from behind. He again, therefore, renews his efforts to escape, and again leaves his pursuers at almost the former distance; but this second effort makes him more feeble than before, and when they come up a second time, he is unable to outstrip them with equal velocity. The poor animal now, therefore, is obliged to have recourse to all his little arts of escape, which sometimes, though but seldom, avail him. In proportion as his strength fails him, the ardour of his pursuers is inflamed; he tracks more heavily on the ground, and this increasing the strength of the scent, redoubles the cries of the hounds, and enforces their speed. It is then that the stag seeks refuge among the herd, and tries every artifice to put off some other head for his own. Sometimes he will send forth some little deer in his stead, in the mean time lying close himself that the hounds may overshoot him. He will break into one thicket after another to find deer, rousing them, gathering them together, and endeavouring to put them upon the tracks he has made. His old companions, however, with a true spirit of ingratitude, now all forsake and shun him with the most watchful industry, leaving the unhappy creature to take his fate by himself. Thus abandoned of his fellows, he again tries other arts, by doubling and crossing in some hard-beaten highway, where the scent is least perceivable. He now also runs against the wind, not

only to cool himself, but the better to hear the voice, and judge of the distance of his implacable pursuers. It is now easily perceivable how sorely he is pressed by his manner of running, which, from the bounding easy pace with which he began, is converted into a stiff and short manner of going; his mouth also is black and dry, without foam on it; his tongue hangs out; and the tears, as some say, are seen starting from his eyes. His last refuge, when every other method of safety has failed him, is to take the water, and to attempt an escape by crossing whatever lake or river he happens to approach. While swimming, he takes all possible care to keep in the middle of the stream, lest by touching the bough of a tree, or the herbage on the banks, he may give scent to the hounds. He is also ever found to swim against the stream; whence the huntsmen have made it into a kind of proverb, *That he that would his chase find, must up with the river and down with the wind.* On this occasion too he will often cover himself under water, so as to show nothing but the tip of his nose. Every resource and every art being at length exhausted, the poor creature tries the last remains of his strength, by boldly opposing those enemies he cannot escape; he therefore faces the dogs and men, threatens with his horns, guards himself on every side, and for some time stands at bay. In this manner, quite desperate, he furiously aims at the first dog or man that approaches; and it often happens that he does not die unrevenged. At that time the more prudent, both of the dogs and men, seem

willing to avoid him; but the whole pack quickly coming up, he is soon surrounded and brought down, and the huntsman winds a *treble mort*, as it is called, with his horn.

Such is the manner of pursuing this animal in England; but every country has a peculiar method of its own, adapted either to the nature of the climate, or the face of the soil. The ancient manner was very different from that practised at present; they used their dogs only to find out the game, but not to rouse it. Hence they were not curious as to the music of their hounds, or the composition of their pack; the dog that opened before he had discovered his game, was held in no estimation. It was their usual manner silently to find out the animal's retreat, and surround it with nets and engines, then to drive him up with all their cries, and thus force him into the toils which they had previously prepared.

In succeeding times the fashion seemed to alter; and particularly in Sicily, the manner of hunting was as follows.* The nobles and gentry being informed which way a herd of deer passed, gave notice to one another, and appointed a day of hunting. For this purpose, every one was to bring a cross-bow, or a long-bow, and a bundle of staves, shod with iron, the heads bored, with a cord passing through them all. Thus provided, they came to where the herd continued grazing, and casting themselves about in a large ring, surrounded the deer on every side. Then each tak-

* Pier. Hieroglyph. lib. vii. cap. 6.

ing his stand, unbound his faggot, set up his stake, and tied the end of the cord to that of his next neighbour, at the distance of about ten feet one from the other. Between each of these stakes was hung a bunch of crimson feathers, and so disposed, that with the least breath of wind they would whirl round, and preserve a sort of fluttering motion. This done, the persons who set up the staves withdrew, and hid themselves in the neighbouring coverts; then the chief huntsman, entering with his hounds within the lines, roused the game with a full cry. The deer, frighted, and flying on all sides, upon approaching the lines were scared away by the fluttering of the feathers, and wandered about within this artificial paling, still awed by the shining and fluttering plumage that encircled their retreat: the huntsman, however, still pursuing, and calling every person by name as he passed by their stand, commanded him to shoot the first, third, or sixth, as he pleased; and if any of them missed, or singled out another than that assigned him, it was considered as a most shameful mischance. In this manner, however, the whole herd was at last destroyed; and the day concluded with mirth and feasting.

The stags of China are of a particular kind, for they are no taller than a common house dog; and hunting them is one of the principal diversions of the great. Their flesh, while young, is exceedingly good; but when they arrive at maturity, it begins to grow hard and tough: however, the tongue, the muzzle, and the ears, are in particular esteem among that luxurious people. Their

manner of taking them is singular enough: They carry with them the heads of some of the females stuffed, and learn exactly to imitate their cry: upon this the male does not fail to appear, and looking on all sides, perceives the head, which is all that the hunter, who is himself concealed, discovers. Upon his nearer approach, the whole company rise, surround, and often take him alive.

There are very few varieties in the red deer of this country, and they are mostly found of the same size and colour. But it is otherwise in different parts of the world, where they are seen to differ in form, in size, in horns, and in colour.

The stag of Corsica is a very small animal, being not above half the size of those common among us. His body is short and thick, his legs short, and his hair of a dark brown.

There is, in the forests of Germany, a kind of stag, named by the ancients the *Tragelaphus*, and which the natives call the *Bran Deer*, or the *Brown Deer*. This is of a darker colour than the common stag, of a lighter shade upon the belly, long hair upon the neck and throat, by which it appears bearded, like the goat.

There is also a very beautiful stag, which by some is said to be a native of Sardinia, but others (among whom is M. Buffon) are of opinion that it comes from Africa or the East Indies. He calls it the *Axis*, after Pliny; and considers it as making the shade between the stag and the fallow-deer. The horns of the axis are round, like those of the stag; but the form of its body entirely resembles that of the buck, and the size also is ex-

actly the same. The hair is of four colours; namely, fallow, white, black, and grey. The white is predominant under the belly, on the inside of the thighs and the legs. Along the back there are two rows of spots in a right line; but those on other parts of the body are very irregular. A white line runs along each side of this animal, while the head and neck are grey. The tail is black above and white beneath, and the hair upon it is six inches long.

Although there are but few individuals of the deer kind, yet the race seems diffused over all parts of the earth. The new continent of America, in which neither the sheep, the goat, nor the gazelle, have been originally bred, nevertheless produces stags, and other animals of the deer kind, in sufficient plenty. The Mexicans have a breed of white stags in their parks, which they call *Stags Royal.** The stags of Canada differ from ours in nothing except the size of the horns, which in them is greater; and the direction of the antlers, which rather turn back than project forward, as in those of Europe. The same difference of size that obtains among our stags is also to be seen in that country; and, as we are informed by Ruysch, the Americans have brought them into the same state of domestic tameness that we have our sheep, goats, or black cattle. They send them forth in the day-time to feed in the forests, and at night they return home with the herdsman who guards them. The inhabitants

* Buffon, vol. xii. p. 55.

have no other milk but what the hind produces, and use no other cheese but what is made from thence. In this manner we find, that an animal which seems made only for man's amusement, may be easily brought to supply his necessities. Nature has many stores of happiness and plenty in reserve, which only want the call of industry to be produced, and now remain as candidates for human approbation.

THE FALLOW-DEER.

No two animals can be more nearly allied than the stag and the fallow-deer.* Alike in form, alike in disposition, in the superb furniture of their heads, in their swiftness and timidity; and yet no two animals keep more distinct, or avoid each other with more fixed animosity. They are never seen to herd in the same place, they never engender together, or form a mixed breed; and even in those countries where the stag is common, the buck seems to be entirely a stranger. In short, they both form distinct families; which, though so seemingly near, are still remote; and although with the same habitudes, yet retain an unalterable aversion.

The fallow-deer, as they are much smaller, so they seem of a nature less robust, and less savage than those of the stag kind. They are found but

* Buffon, vol. xii. p. 36.

rarely wild in the forests; they are, in general, bred up in parks, and kept for the purposes of hunting, or of luxury, their flesh being preferred to that of any other animal. It need scarcely be mentioned, that the horns of the buck make its principal distinction, being broad and palmated, whereas those of the stag are in every part round. In the one, they are flatted and spread like the palm of the hand; in the other they grow like a tree, every branch being of the shape of the stem that bears it. The fallow-deer also has the tail longer, and the hair lighter than the stag; in other respects, they pretty nearly resemble one another.*

The head of the buck, as of all other animals of this kind, is shed every year, and takes the usual time for repairing. The only difference between it and the stag is, that this change happens later in the buck; and its rutting time, consequently, falls more into the winter. It is not found so furious at this season as the former, nor does it so much exhaust itself by the violence of its ardour. It does not quit its natural pastures

[* Mr White, in his Natural History of Selborne, informs us, that the fallow-deer is furnished with two *spiracula*, or breathing places, besides the nostrils. When deer are thirsty they plunge their noses, like some horses, very deep under water while in the act of drinking, and continue them in that situation for a considerable time; but, to obviate any inconveniency, they can open two vents, one at the inner corner of each eye, having a communication with the nose. This seems, as our author observes, to be an extraordinary provision of nature; for it looks as if these creatures could not be suffocated, though their mouths and nostrils were both stopped. This curious formation of the head, he farther remarks, may be of singular service to beasts of chase, by affording them free respiration; and no doubt these additional nostrils are thrown open when they are hard run. Mr Pennant has observed the same curious organization in the antelope.]

in quest of the female, nor does it attack other animals with indiscriminate ferocity; however, the males combat for the female among each other, and it is not without many contests, that one buck is seen to become master of the whole herd.

It often happens, also, that a herd of fallow-deer is seen to divide into two parties, and engage each other with great ardour and obstinacy.* They both seem desirous of gaining some favourite spot of the park for pasture, and of driving the vanquished party into the coarser and more disagreeable parts. Each of these factions has its particular chief; namely, the two oldest and strongest of the herd. These lead on to the engagement, and the rest follow under their direction. These combats are singular enough, from the disposition and conduct which seem to regulate their mutual efforts. They attack with order, and support the assault with courage; they come to each other's assistance, they retire, they rally, and never give up the victory upon a single defeat. The combat is renewed for several days together; until at length the most feeble side is obliged to give way, and is content to escape to the most disagreeable part of the park, where only they can find safety and protection.

The fallow-deer is easily tamed, and feeds upon many things which the stag refuses. By this means it preserves its venison better; and even after rutting it does not appear entirely exhausted,

* Buffon, vol. xii. p. 36.

It continues almost in the same state through the whole year, although there are particular seasons when its flesh is chiefly in esteem. This animal also browzes closer than the stag; for which reason it is more prejudicial among young trees, which it often strips too close for recovery. The young deer eat much faster and more greedily than the old; they seek the female at their second year, and, like the stag, are fond of variety. The doe goes with young above eight months, like the hind, and commonly brings forth one at a time; but they differ in this, that the buck comes to perfection at three, and lives till sixteen, whereas the stag does not come to perfection till seven, and lives till forty.

As this animal is a beast of chase, like the stag, so the hunters have invented a number of names relative to him. The buck is the first year called a *fawn;* the second, a *pricket;* the third, a *sorel;* the fourth, a *sore;* the fifth, a *buck of the first head;* and the sixth, a *great buck:* the female is called a *doe;* the first year a *fawn;* and the second a *tegg*. The manner of hunting the buck is pretty much the same as that of stag-hunting, except that less skill is required in the latter. The buck is more easily roused; it is sufficient to judge by the view, and mark what grove or covert it enters, as it is not known to wander far from thence, nor, like the stag, to change its *layer*, or place of repose. When hard hunted, it takes to some stronghold or covert with which it is acquainted, in the more gloomy parts of the wood, or the steeps of the mountain; not like the stag, flying

before the hounds, nor crossing nor doubling, nor using any of the subtleties which the stag is accustomed to. It will take the water when sorely pressed, but seldom a great river; nor can it swim so long, nor so swiftly, as the former. In general, the strength, the cunning, and the courage of this animal, are inferior to those of the stag; and, consequently, it affords neither so long, so various, nor so obstinate a chase: besides, being lighter, and not tracking so deeply, it leaves a less powerful and lasting scent, and the dogs in the pursuit are more frequently at a fault.

As the buck is a more delicate animal than the stag, so also it is subject to greater varieties.* We have in England two varieties of the fallow-deer, which are said to be of foreign origin: the beautiful spotted kind, which is supposed to have been brought from Bengal; and the very deep brown sort, that are now so common in several parts of this kingdom. These were introduced by King James the First from Norway; for, having observed their hardiness, and that they could endure the winter, even in that severe climate, without fodder, he brought over some of them into Scotland, and disposed of them among his chases. Since that time they have multiplied in many parts of the British empire; and England is now become more famous for its venison than any other country in the world. Whatever pains the French have taken to rival us in this particu-

* British Zoology.

lar, the flesh of their fallow-deer, of which they keep but a few, has neither the fatness nor the flavour of that fed upon English pasture.

However, there is scarcely a country in Europe, except far to the northward, in which this animal is a stranger. The Spanish fallow-deer are as large as stags, but of a darker colour, and a more slender neck: their tails are longer than those of ours; they are black above, and white below. The Virginian deer are larger and stronger than ours, with great necks, and their colour inclinable to grey. Other kinds have the hoofs of their hind legs marked outwardly with a white spot; and their ears and tails much longer than the common. One of these has been seen full of white spots, with a black list down the middle of his back. In Guiana, a country of South America, according to Labat, there are deer without horns, which are much less than those of Europe, but resembling them in every other particular. They are very lively, light of course, and excessively fearful; their hair is of a reddish fallow, their heads are small and lean, their ears little, their necks long and arched, the tail short, and the sight piercing. When pursued, they fly into places where no other animal can follow them. The Negroes who pursue them, stand to watch for them in narrow paths, which lead to the brook or the meadow where they feed; there waiting in the utmost silence, (for the slightest sound will drive them away), the Negro, when he perceives the animal within reach, shoots, and is happy if he can bring down his game. Their flesh, though

seldom fat, is considered as a great delicacy, and the hunter is well rewarded for his trouble.

THE ROEBUCK.

The Roebuck is the smallest of the deer kind known in our climate, and is now almost extinct among us, except in some parts of the Highlands of Scotland. It is generally about three feet long, and about two feet high. The horns are from eight to nine inches long, upright, round, and divided into only three branches. The body is covered with very long hair, well adapted to the rigour of its mountainous abode. The lower part of each hair is ash colour; near the ends is a narrow bar of black, and the points are yellow. The hairs on the face are black, tipped with ash colour. The ears are long, their insides of a pale yellow, and covered with long hair. The spaces bordering on the eyes and mouth are black. The chest, belly, and legs, and the inside of the thighs, are of a yellowish-white; the rump is of a pure white, and the tail very short. The make of this little animal is very elegant, and its swiftness equals its beauty. It differs from the fallow-deer in having round horns, and not flatted like theirs. It differs from the stag, in its smaller size, and the proportionable paucity of its antlers; and it differs from all of the goat kind, as it annually sheds its head, and obtains a new one, which none of that kind are ever seen to do.

As the stag frequents the thickest forests, and the sides of the highest mountains, the roebuck, with humbler ambition, courts the shady thicket, and the rising slope. Although less in size, and far inferior in strength to the stag, it is yet more beautiful, more active, and even more courageous: its hair is always smooth, clean, and glossy; and it frequents only the driest places, and of the purest air. Though but a very little animal, as we have already observed, yet when its young is attacked, it faces even the stag himself, and often comes off victorious.* All its motions are elegant and easy; it bounds without effort, and continues the course with but little fatigue. It is also possessed of more cunning in avoiding the hunter, is more difficult to pursue, and, although its scent is much stronger than that of the stag, it is more frequently found to make a good retreat. It is not with the roebuck as with the stag, who never offers to use art until his strength is beginning to decline; this more cunning animal, when it finds that its first efforts to escape are without success, returns upon its former track, again goes forward, and again returns, until by its various windings it has entirely confounded the scent, and joined the last emanations to those of its former course. It then, by a bound, goes to one side, lies flat upon its belly, and permits the pack to pass by very near without offering to stir.

But the roebuck differs not only from the stag in superior cunning, but also in its natural ap-

* Buffon, vol. xii. p. 75.

petites, its inclinations, and its whole habits of living. Instead of herding together, these animals live in separate families; the sire, the dam, and the young ones associate together, and never admit a stranger into their little community. All others of the deer kind are inconstant in their affection; but the roebuck never leaves its mate; and as they have been generally bred up together from their first fawning, they conceive so strong an attachment, the male for the female, that they never after separate. Their rutting season continues but fifteen days, from the latter end of October to about the middle of November. They are not at that time, like the stag, overloaded with fat; they have not that strong odour which is perceived in all others of the deer kind; they have none of those furious excesses; nothing, in short, that alters their state; they only drive away their fawns upon these occasions, the buck forcing them to retire, in order to make room for a succeeding progeny: however, when the copulating season is over, the fawns return to their does, and remain with them some time longer; after which they quit them entirely, in order to begin an independent family of their own. The female goes with young but five months and a half; which alone serves to distinguish this animal from all others of the deer kind, that continue pregnant more than eight. In this respect, she rather approaches more nearly to the goat kind; from which, however, this race is separated by the male's annually casting its horns.

When the female is ready to bring forth, she seeks a retreat in the thickest part of the woods, being not less apprehensive of the buck, from whom she then separates, than of the wolf, the wild cat, and almost every ravenous animal of the forest: she generally produces two at a time, and three but very rarely. In about ten or twelve days these are able to follow their dam, except in cases of warm pursuit, when their strength is not equal to the fatigue. Upon such occasions, the tenderness of the dam is very extraordinary; leaving them in the deepest thickets, she offers herself to the danger, flies before the hounds, and does all in her power to lead them from the retreat where she has lodged her little ones. Such animals as are nearly upon her own level she boldly encounters; attacks the stag, the wild cat, and even the wolf; and while she has life, continues her efforts to protect her young. Yet all her endeavours are often vain; about the month of May, which is her fawning time, there is a greater destruction among those animals than at any other season of the year. Numbers of the fawns are taken alive by the peasants; numbers are found out and worried by the dogs, and still more by the wolf, which has always been their most inveterate enemy. By these continual depredations upon this beautiful creature, the roebuck is every day becoming scarcer, and the whole race in many countries is wholly worn out. They were once common in England: the huntsmen, who characterized only such beasts as they knew, have given names to the different kinds

and ages, as to the stag: thus they called it the first year, a *hind;* the second, a *gyrle;* and the third, a *hemuse;* but these names at present are utterly useless, since the animal no longer exists among us. Even in France, where it was once extremely common, it is now confined to a few provinces; and it is probable that in an age or two the whole breed will be utterly extirpated. M. Buffon indeed observes, that in those districts where it is mostly found, it seems to maintain its usual plenty, and that the balance between its destruction and increase is held pretty even; however, the number in general is known to decrease, for wherever cultivation takes place, the beasts of nature are known to retire. Many animals that once flourished in the world may now be extinct; and the descriptions of Aristotle and Pliny, though taken from life, may be considered as fabulous, as their archetypes are no longer existing.

The fawns continue to follow the deer eight or nine months in all; and upon separating, their horns begin to appear, simple and without antlers the first year, as in those of the stag kind.* These they shed at the latter end of autumn, and renew during the winter; differing in this from the stag, who sheds them in spring, and renews them in summer. When the roebuck's head is completely furnished, it rubs the horns against trees in the manner of the stag, and thus strips them of the rough skin and the blood vessels, which no longer contribute to their nourishment and growth.

* Buffon, vol. xii. p. 83.

When these fall, and new ones begin to appear, the roebuck does not retire as the stag to the covert of the wood, but continues its usual haunts, only keeping down its head to avoid striking its horns against the branches of trees, the pain of which it seems to feel with exquisite sensibility. The stag, who sheds his horns in summer, is obliged to seek a retreat from the flies, that at that time greatly incommode him; but the roebuck, who sheds them in winter, is under no such necessity; and, consequently, does not separate from its little family, but keeps with the female all the year round.*

As the growth of the roebuck, and its arrival at maturity, is much speedier than that of the stag, so its life is proportionably shorter. It seldom is found to extend above twelve or fifteen years; and if kept tame, it does not live above six or seven. It is an animal of a very delicate constitution, requiring variety of food, air, and exercise. It must be paired with a female, and kept in a park of at least a hundred acres. They may easily be subdued, but never thoroughly tamed. No arts can teach them to be familiar with the feeder, much less attached to him. They still preserve a part of their natural wildness, and are subject to terrors without a cause. They sometimes, in attempting to escape, strike themselves with such force against the walls of their enclosure, that they break their limbs, and become utterly disabled. Whatever care is taken to tame them,

* Buffon, vol. xii. p. 88.

they are never entirely to be relied on, as they have capricious fits of fierceness, and sometimes strike at those they dislike with a degree of force that is very dangerous.

The cry of the roebuck is neither so loud nor so frequent as that of the stag. The young ones have a particular manner of calling to the dam, which the hunters easily imitate, and often thus allure the female to her destruction. Upon some occasions also they become in a manner intoxicated with their food, which, during the spring, is said to ferment in their stomachs, and they are then very easily taken. In summer they keep close under covert of the forest, and seldom venture out, except in violent heats, to drink at some river or fountain. In general, however, they are contented to slake their thirst with the dew that falls on the grass and the leaves of trees, and seldom risk their safety to satisfy their appetite. They delight chiefly in hilly grounds, preferring the tender branches and buds of trees to corn, or other vegetables; and it is universally allowed that the flesh of those between one and two years old is the greatest delicacy that is known. Perhaps, also, the scarceness of it enhances its flavour.

In America this animal is much more common than in Europe. With us there are but two known varieties; the red, which is the larger sort; and the brown, with a spot behind, which is less. But in the new continent the breed is extremely numerous, and the varieties in equal proportion. In Louisiana, where they are extremely common, they are much larger than in Europe;

and the inhabitants live in a great measure upon its flesh, which tastes like mutton when well fatted. They are found also in Brasil, where they have the name of *Cugacu Apara*, only differing from ours in some slight deviations in the horns. This animal is also said to be common in China; although such as have described it seem to confound it with the musk-goat, which is of a quite different nature.

THE ELK.

We have hitherto been describing minute animals in comparison of the Elk, the size of which, from concurrent testimony, appears to be equal to that of the elephant itself. It is an animal rather of the buck than the stag kind, as its horns are flatted towards the top; but it is far beyond both in stature, some of them being known to be above ten feet high. It is a native both of the old and new continent, being known in Europe under the name of the Elk, and in America by that of the Moose-deer. It is sometimes taken in the German and Russian forests, although seldom appearing; but it is extremely common in North America, where the natives pursue and track it in the snow. The accounts of this animal are extremely various; some describing it as being no higher than a horse, and others above twelve feet high.

As the stature of this creature makes its chief peculiarity, so it were to be wished that we could

come to some precision upon that head. If we were to judge of its size by the horns which are sometimes fortuitously dug up in many parts of Ireland, we should not be much amiss in ascribing them to an animal at least ten feet high. One of these I have seen, which was ten feet nine inches from one tip to the other. From such dimensions, it is easy to perceive that it required an animal far beyond the size of a horse to support them. To bear a head with such extensive and heavy antlers, required no small degree of strength; and without all doubt, the bulk of the body must have been proportionable to the size of the horns. I remember some years ago to have seen a small moose-deer, which was brought from America by a gentleman of Ireland; it was about the size of a horse, and the horns were very little larger than those of a common stag: this, therefore, serves to prove that the horns bear an exact proportion to the animal's size. The small elk has but small horns; whereas those enormous ones which we have described above, must have belonged to a proportionable creature. In all the more noble animals, nature observes a perfect symmetry; and it is not to be supposed that she fails in this single instance. We have no reason, therefore, to doubt the accounts of Jocelyn and Dudley, who affirm that they have been found fourteen spans, which, at nine inches to a span, makes the animal almost eleven feet high. Others have extended their accounts to twelve and fourteen feet, which makes this creature one of the most formidable of the forest.

There is but very little difference between the European elk and the American moose-deer, as they are but varieties of the same animal. It may be rather larger in America than with us, as in the forests of that unpeopled country it receives less disturbance than in our own. In all places, however, it is timorous and gentle; content with its pasture, and never willing to disturb any other animal, when supplied itself.

The European elk grows to about seven or eight feet high. In the year 1742 there was a female of this animal shown at Paris, which was caught in a forest of Red Russia, belonging to the Cham of Tartary:* it was then but young, and its height was even at that time six feet seven inches; but the describer observes, that it has since become much taller and thicker, so that we may suppose this female at least seven feet high. There have been no late opportunities of seeing the male; but by the rule of proportion, we may estimate his size at eight or nine feet at the least, which is about twice as high as an ordinary horse. The height, however, of the female, which was measured, was but six feet seven inches Paris measure, or almost seven English feet high. It was ten feet from the tip of the nose to the insertion of the tail, and eight feet round the body. The hair was very long and coarse, like that of a wild boar. The ears resembled those of a mule, and were a foot and a half long. The upper jaw was longer by six inches than the lower; and like

* Dictionnaire Raisonné des Animaux. Au nom, *Elan*.

other ruminating animals, it had no teeth, (cutting teeth, I suppose the describer means). It had a large beard under the throat, like a goat; and in the middle of the forehead, between the horns, there was a bone as large as an egg. The nostrils were four inches long on each side of the mouth. It made use of its fore-feet as a defence against its enemies. Those who showed it asserted, that it ran with astonishing swiftness; and that it swam also with equal expedition, and was very fond of the water. They gave it thirty pounds of bread every day, besides hay, and it drank eight buckets of water. It was tame and familiar, and submissive enough to its keeper.

This description differs in many circumstances from that which we have of the moose, or American elk, which the French call the *Original*. Of these there are two kinds; the common light grey moose, which is not very large; and the black moose, which grows to an enormous height. Mr Dudley observes, that a doe or hind of the black moose kind, of the fourth year, wanted but an inch of seven feet high. All, however, of both kinds, have flat palmed horns, not unlike the fallow-deer, only that the palm is much larger, having a short trunk at the head, and then immediately spreading above a foot broad, with a kind of small antlers, like teeth, on one of the edges. In this particular all of the elk kind agree, as well the European elk, as the grey and the black moose-deer.

The grey moose-deer is about the size of a horse; and although it has large buttocks, its

tail is not above an inch long. As in all of this kind the upper lip is much longer than the under, it is said that they continue to go backward as they feed. Their nostrils are so large that a man may thrust his hand in a considerable way; and their horns are as long as those of a stag, but, as was observed, much broader.

The black moose is the enormous animal mentioned above, from eight to twelve feet high. Jocelyn, who is the first English writer that mentions it, says, that it is a goodly creature, twelve feet high, with exceeding fair horns, that have broad palms, two fathoms from the top of one horn to another. He assures us that it is a creature, or rather a monster of superfluity, and many times bigger than an English ox. This account is confirmed by Dudley; but he does not give so great an expansion to the horns, measuring them only thirty-one inches between one tip and the other: however, that such an extraordinary animal as Jocelyn describes has actually existed, we can make no manner of doubt of, since there are horns common enough to be seen among us twelve feet from one tip to the other.

These animals delight in cold countries, feeding upon grass in summer, and the bark of trees in winter. When the whole country is deeply covered with snow, the moose-deer herd together under the tall pine trees, strip off the bark, and remain in that part of the forest while it yields them subsistence. It is at that time that the natives prepare to hunt them; and particularly when the sun begins to melt the snow by day,

which is frozen again at night; for then the icy crust which covers the surface of the snow is too weak to support so great a bulk, and only retards the animal's motion. When the Indians, therefore, perceive a herd of these at a distance, they immediately prepare for their pursuit, which is not, as with us, the sport of an hour, but is attended with toil, difficulty, and danger.* The timorous animal no sooner observes its enemies approach, than it immediately endeavours to escape, but sinks at every step it takes. Still, however, it pursues its way through a thousand obstacles; the snow, which is usually four feet deep, yields to its weight, and embarrasses its speed; the sharp ice wounds its feet; and its lofty horns are entangled in the branches of the forest as it passes along. The trees, however, are broken down with ease; and wherever the moose-deer runs, it is perceived by the snapping off the branches of trees, as thick as a man's thigh, with its horns. The chase lasts in this manner for the whole day, and sometimes it has been known to continue for two, nay, three days together; for the pursuers are often not less excited by famine, than the pursued by fear. Their perseverance, however, generally succeeds; and the Indian who first comes near enough, darts his lance with unerring aim, which sticks in the poor animal, and at first increases its efforts to escape. In this manner the moose trots heavily on, (for that is its usual pace), till its pursuers once more come up,

* Phil. Trans. vol. ii. p. 436.

and repeat their blow; upon this, it again summons up sufficient vigour to get a-head; but at last, quite tired, and spent with loss of blood, it sinks, as the describer expresses it, like a ruined building, and makes the earth shake beneath its fall.

This animal when killed is a very valuable acquisition to the hunters; the flesh is very well tasted, and is said to be very nourishing. The hide is strong, and so thick that it has been often known to turn a musket-ball; however, it is soft and pliable, and when tanned the leather is extremely light, yet very lasting. The fur is a light grey in some, and blackish in others; and when viewed through a microscope, appears spongy like a bulrush, and is smaller at the roots and points than in the middle: for this reason it lies very flat and smooth, and though beaten or abused never so much, it always returns to its former state. The horns also are not less useful, being applied to all the purposes for which hartshorn is beneficial: these are different in different animals; in some they resemble entirely those of the European elk, which spread into a broad palm, with small antlers on one of the edges; in others they have a branched brow-antler between the bur and the palm, which the German elk has not; and in this they entirely agree with those whose horns are so frequently dug up in Ireland. This animal is said to be troubled with the epilepsy, as it is often found to fall down when pursued, and thus becomes an easier prey: for this reason an imaginary virtue has been ascribed to the hinder hoof,

which some have supposed to be a specific against all epileptic disorders. This, however, may be considered as a vulgar error, as well as that of its curing itself of this disorder by applying the hinder hoof behind the ear. After all, this animal is but very indifferently and confusedly described by travellers; each mixing his account with something false or trivial, often mistaking some other quadruped for the elk, and confounding its history. Thus, some have mistaken it for the rein-deer, which in every thing but size it greatly resembles; some have supposed it to be the same with the Tapurette,* from which it entirely differs; some have described it as the common red American stag, which scarcely differs from our own; and, lastly, some have confounded it with the Bubalus, which is more properly a gazelle of Africa.†

THE REIN-DEER.

Of all animals of the deer kind, the Rein-deer is the most extraordinary and the most useful. It is a native of the icy regions of the north; and though many attempts have been made to accustom it to a more southern climate, it shortly feels the influence of the change, and in a few months declines and dies. Nature seems to have fitted it entirely to answer the necessities of that

* Condamine. † Dapper, Description de l'Afrique, p. 17.

hardy race of mankind that live near the pole. As these would find it impossible to subsist among their barren snowy mountains without its aid, so this animal can live only there, where its assistance is most absolutely necessary. From it alone the natives of Lapland and Greenland supply most of their wants; it answers the purposes of a horse, to convey them and their scanty furniture from one mountain to another; it answers the purposes of a cow, in giving milk; and it answers the purposes of the sheep, in furnishing them with a warm, though a homely kind of clothing. From this quadruped alone, therefore, they receive as many advantages as we derive from three of our most useful creatures; so that Providence does not leave these poor outcasts entirely destitute, but gives them a faithful domestic, more patient and serviceable than any other in nature.

The rein-deer resembles the American elk in the fashion of its horns. It is not easy in words to describe these minute differences; nor will the reader, perhaps, have a distinct idea of the similitude, when told that both have brow-antlers, very large, and hanging over their eyes, palmated towards the top, and bending forward, like a bow. But here the similitude between these two animals ends; for as the elk is much larger than the stag, so the rein-deer is much smaller. It is lower and stronger built than the stag; its legs are shorter and thicker, and its hoofs much broader than in that animal; its hair is much thicker and warmer, its horns much

larger in proportion, and branching forward over its eyes; its ears are much larger; its pace is rather a trot than a bounding, and this it can continue for a whole day; its hoofs are cloven and moveable, so that it spreads them abroad as it goes, to prevent its sinking in the snow. When it proceeds on a journey, it lays its great horns on its back, while there are two branches which always hang over its forehead, and almost cover its face. One thing seems peculiar to this animal and the elk, which is, that as they move along, their hoofs are heard to crack with a pretty loud noise. This arises from their manner of treading; for as they rest upon their cloven hoof, it spreads on the ground, and the two divisions separate from each other; but when they lift it, the divisions close again, and strike against each other with a crack. The female also of the rein-deer has horns as well as the male, by which the species is distinguished from all other animals of the deer kind whatsoever.

When the rein-deer first shed their coat of hair, they are brown; but in proportion as summer approaches, their hair begins to grow whitish, until at last they are nearly grey.* They are, however, always black about the eyes. The neck has long hair, hanging down, and coarser than upon any other part of the body. The feet, just at the insertion of the hoof, are surrounded with a ring of white. The hair in gene-

* For the greatest part of this description of the rein-deer, I am obliged to M. Hoffberg; upon whose authority, being a native of Sweden, and an experienced naturalist, we may confidently rely.

ral stands so thick over the whole body, that if one should attempt to separate it, the skin will no where appear uncovered: whenever it falls also, it is not seen to drop from the root, as in other quadrupeds, but seems broken short near the bottom; so that the lower part of the hair is seen growing, while the upper falls away.

The horns of the female are made like those of the male, except that they are smaller and less branching. As in the rest of the deer kind, they sprout from the points; and also in the beginning are furnished with a hairy crust, which supports the blood-vessels, of most exquisite sensibility. The rein-deer shed their horns after rutting-time, at the latter end of November; and they are not completely furnished again till towards autumn. The female always retains hers till she brings forth, and then sheds them about the beginning of November. If she be barren, however, which is not unfrequently the case, she does not shed them till winter. The castration of the rein-deer does not prevent the shedding of their horns: those which are the strongest cast them early in winter; those which are more weakly not so soon. Thus, from all these circumstances, we see how greatly this animal differs from the common stag. The female of the rein-deer has horns, which the hind is never seen to have; the rein-deer, when castrated, renews its horns, which we are assured the stag never does: it differs not less in its habits and manner of living, being tame, submissive, and patient, while the stag is wild, capricious, and unmanageable.

The rein-deer, as was said, is naturally an inhabitant of the countries bordering on the arctic circle. It is not unknown to the natives of Siberia. The North Americans also hunt it, under the name of the *Caribou*. But in Lapland, this animal is converted to the utmost advantage; and some herdsmen of that country are known to possess above a thousand in a single herd.

Lapland is divided into two districts, the mountainous and the woody. The mountainous part of the country is at best barren and bleak, excessively cold, and uninhabitable during the winter; still, however, it is the most desirable part of this frightful region, and is most thickly peopled during the summer. The natives generally reside on the declivity of the mountains, three or four cottages together, and lead a cheerful and social life. Upon the approach of winter they are obliged to migrate into the plains below, each bringing down his whole herd, which often amounts to more than a thousand, and leading them where the pasture is in greatest plenty. The woody part of the country is much more desolate and hideous. The whole face of nature there presents a frightful scene of trees without fruit, and plains without verdure. As far as the eye can reach, nothing is to be seen, even in the midst of summer, but barren fields, covered only with a moss almost as white as snow: no grass, no flowery landscapes, only here and there a pine tree, which may have escaped the frequent conflagrations by which the natives burn down their forests. But what is very extraordinary, as

the whole surface of the country is clothed in white, so, on the contrary, the forests seem to the last degree dark and gloomy. While one kind of moss makes the fields look as if they were covered with snow, another kind blackens over all the trees, and even hides their verdure. This moss, however, which deforms the country, serves for its only support, as upon it alone the rein-deer can subsist. The inhabitants, who, during the summer, lived among the mountains, drive down their herds in winter, and people the plains and woods below. Such of the Laplanders as inhabit the woods and the plains all the year round, live remote from each other, and having been used to solitude, are melancholy, ignorant, and helpless. They are much poorer also than the mountaineers, for, while one of those is found to possess a thousand rein-deer at a time, none of these are ever known to rear the tenth part of that number. The rein-deer makes the riches of this people; and the cold mountainous parts of the country agree best with its constitution. It is for this reason, therefore, that the mountains of Lapland are preferred to the woods; and that many claim an exclusive right to the tops of hills, covered in almost eternal snow.

As soon as the summer begins to appear, the Laplander, who had fed his rein-deer upon the lower grounds during the winter, then drives them up to the mountains, and leaves the woody country, and the low pasture, which at that season are truly deplorable. The gnats, bred by the sun's heat in the marshy bottoms and the

weedy lakes, with which the country abounds more than any other part of the world, are all upon the wing, and fill the whole air, like clouds of dust in a dry windy day. The inhabitants, at that time, are obliged to daub their faces with pitch, mixed with milk, to shield their skins from their depredations. All places are then so greatly infested, that the poor natives can scarcely open their mouths without fear of suffocation: the insects enter, from their numbers and minuteness, into the nostrils and the eyes, and do not leave the sufferer a moment at his ease. But they are chiefly enemies to the rein-deer: the horns of that animal being then in their tender state, and possessed of extreme sensibility, a famished cloud of insects instantly settle upon them, and drive the poor animal almost to distraction. In this extremity, there are but two remedies, to which the quadruped, as well as its master, are obliged to have recourse. The one is, for both to take shelter near their cottage, where a large fire of tree moss is prepared, which filling the whole place with smoke, keeps off the gnat, and thus, by one inconvenience, expels a greater: the other is, to ascend to the highest summit of the mountains, where the air is too thin, and the weather too cold for the gnats to come. There the rein-deer are seen to continue the whole day, although without food, rather than to venture down into the lower parts, where they can have no defence against their unceasing persecutors. —Besides the gnat, there is also a gadfly, that, during the summer season, is no less formidable

to them. This insect is bred under their skins, where the egg has been deposited the preceding summer; and it is no sooner produced as a fly, than it again endeavours to deposit its eggs in some place similar to that from whence it came. Whenever, therefore, it appears flying over a herd of rein-deer, it puts the whole body, how numerous soever, into motion; they know their enemy, and do all they can, by tossing their horns, and running among each other, to terrify or avoid it. All their endeavours, however, are too generally without effect; the gadfly is seen to deposit its eggs, which burrowing under the skin, wound it in several places, and often bring on an incurable disorder. In the morning, therefore, as soon as the Lapland herdsman drives his deer to pasture, his greatest care is to keep them from scaling the summits of the mountains where there is no food, but where they go merely to be at ease from the gnats and gadflies that are ever annoying them. At this time there is a strong contest between the dogs and the deer; the one endeavouring to climb up against the side of the hill, and to gain those summits that are covered in eternal snows; the other forcing them down, by barking and threatening, and in a manner compelling them into the places where their food is in the greatest plenty. There the men and dogs confine them, guarding them with the utmost precaution the whole day, and driving them home at the proper seasons for milking.

The female brings forth in the middle of May, and gives milk till about the middle of October.

Every morning and evening, during the summer, the herdsman returns to the cottage with his deer to be milked, where the women previously have kindled up a smoky fire, which effectually drives off the gnats, and keeps the rein-deer quiet while milking. The female furnishes about a pint, which, though thinner than that of the cow, is nevertheless sweeter and more nourishing. This done, the herdsman drives them back to pasture: he neither folds nor houses them, neither provides for their subsistence during the winter, nor improves their pasture by cultivation.

Upon the return of the winter, when the gnats and flies are no longer to be feared, the Laplander descends into the lower grounds; and as there are but few to dispute the possession of that desolate country, he has an extensive range to feed them in. Their chief, and almost their only food at that time, is the white moss already mentioned, which, from its being fed upon by this animal, obtains the name of the *Lichen rangiferinus*. This is of two kinds: the woody lichen, which covers almost all the desert parts of the country like snow; the other is black, and covers the branches of the trees in very great quantities. However unpleasing these may be to the spectator, the native esteems them as one of his choicest benefits, and the most indulgent gift of nature. While his fields are clothed with moss, he envies neither the fertility nor the verdure of the more southern landscape: dressed up warmly in his deer-skin clothes, with shoes and gloves of the same materials, he drives his herds along the de-

sert, fearless and at ease, ignorant of any higher luxury than what their milk and smoke-dried flesh afford him. Hardened to the climate, he sleeps in the midst of ice; or awaking, dozes away his time with tobacco, while his faithful dogs supply his place, and keep the herd from wandering. The deer, in the mean time, with instincts adapted to the soil, pursue their food, though covered in the deepest snow. They turn it up with their noses like swine; and even though its surface be frozen and stiff, yet the hide is so hardened in that part, that they easily overcome the difficulty. It sometimes, however, happens, though but rarely, that the winter commences with rain, and a frost ensuing, covers the whole country with a glazed crust of ice. Then, indeed, both the rein-deer and the Laplander are undone; they have no provisions laid up in case of accident, and the only resource is to cut down the large pine trees that are covered with moss, which furnishes but a scanty supply; so that the greatest part of the herd is then seen to perish without a possibility of assistance. It sometimes also happens that even this supply is wanting; for the Laplander often burns down his woods, in order to improve and fertilize the soil which produces the moss upon which he feeds his cattle.

In this manner the pastoral life is still continued near the pole: neither the coldness of the winter nor the length of the nights, neither the wildness of the forest nor the vagrant disposition of the herd, interrupt the even tenor of the Laplander's life. By night and day he is seen attending his

favourite cattle, and remains unaffected in a season which would be speedy death to those bred up in a milder climate. He gives himself no uneasiness to house his herds, or to provide a winter subsistence for them; he is at the trouble neither of manuring his grounds nor bringing in his harvests; he is not the hireling of another's luxury; all his labours are to obviate the necessities of his own situation, and these he undergoes with cheerfulness, as he is sure to enjoy the fruits of his own industry. If, therefore, we compare the Laplander with the peasant of more southern climates, we shall have little reason to pity his situation: the climate in which he lives is rather terrible to us than to him; and as for the rest, he is blessed with liberty, plenty, and ease. The rein-deer alone supplies him with all the wants of life, and some of the conveniencies, serving to show how many advantages nature is capable of supplying when necessity gives the call. Thus, the poor little helpless native, who was originally, perhaps, driven by fear or famine into those inhospitable climates, would seem, at first view, to be the most wretched of mankind; but it is far otherwise: he looks round among the few wild animals that his barren country can maintain, and singles out one from among them, and that of a kind which the rest of mankind have not thought worth taking from a state of nature: this he cultivates, propagates, and multiplies, and from this alone derives every comfort that can soften the severity of his situation.

The rein-deer of this country are of two kinds, the wild and the tame. The wild are larger and stronger, but more mischievous than the others. Their breed, however, is preferred to that of the tame; and the female of the latter is often sent into the woods, from whence she returns home impregnated by one of the wild kind. These are fitter for drawing the sledge, to which the Laplander accustoms them betimes, and yokes them to it by a strap, which goes round the neck, and comes down between their legs. The sledge is extremely light, and shod at the bottom with the skin of a young deer, the hair turned to slide on the frozen snow. The person who sits on this guides the animal with a cord fastened round the horns, and encourages it to proceed with his voice, and drives it with a goad. Some of the wild breed, though by far the strongest, are yet found refractory, and often turn upon their drivers, who have then no other resource but to cover themselves with their sledge, and let the animal vent its fury upon that. But it is otherwise with those that are tame: no creature can be more active, patient, and willing; when hard pushed they will trot nine or ten Swedish miles, or between fifty and sixty English miles at one stretch. But in such a case the poor obedient creature fatigues itself to death, and if not prevented by the Laplander, who kills it immediately, it will die a day or two after. In general, they can go about thirty miles without halting, and this without any great or dangerous efforts. This, which is the only manner of travelling in

that country, can be performed only in winter, when the snow is glazed over with ice; and although it be a very speedy method of conveyance, yet it is inconvenient, dangerous, and troublesome.

In order to make these animals more obedient, and more generally serviceable, they castrate them; this operation the Laplanders perform with their teeth: these become sooner fat when taken from labour, and they are found to be stronger in drawing the sledge. There is usually one male left entire for every six females; these are in rut from the feast of St Matthew to about Michaelmas. At this time their horns are thoroughly burnished, and their battles among each other are fierce and obstinate. The females do not begin to breed till they are two years old, and then they continue regularly breeding every year till they are superannuated. They go with young above eight months, and generally bring forth two at a time. The fondness of the dam for her young is very remarkable; it often happens that when they are separated from her, she will return from pasture, keep calling round the cottage for them, and will not desist until, dead or alive, they are brought and laid at her feet. They are at first of a light brown, but they become darker with age; and at last the old ones are of a brown almost approaching to blackness. The young follow the dam for two or three years; but they do not acquire their full growth until four. They are then broke in, and managed for drawing the sledge; and they continue serviceable for four or

five years longer. They never live above fifteen or sixteen years; and when they arrive at the proper age, the Laplander generally kills them for the sake of their skins and their flesh. This he performs by striking them on the back of the neck with his knife into the spinal marrow, upon which they instantly fall, and he then cuts the arteries that lead to the heart, and lets the blood discharge itself into the cavity of the breast.

There is scarcely any part of this animal that is not converted to its peculiar uses. As soon as it begins to grow old, and some time before the rut, it is killed, and the flesh dried in the air. It is also sometimes hardened with smoke, and laid up for travelling provision, when the natives migrate from one part of the country to another. During the winter the rein-deer are slaughtered as sheep with us; and every four persons in the family are allowed one rein-deer for their week's subsistence. In spring they spare the herd as much as they can, and live upon fresh fish; in summer the milk and curd of the rein-deer makes their chief provision; and in autumn they live wholly upon fowls, which they kill with a cross-bow, or catch in springes. Nor is this so scanty an allowance, since at that time the sea-fowls come in such abundance that their ponds and springs are covered over. These are not so shy as with us, but yield themselves an easy prey. They are chiefly allured to those places by the swarms of gnats which infest the country during summer, and now repay the former inconveniencies, by inviting such numbers of birds as supply the natives

with food a fourth part of the year in great abundance.

The milk, when newly taken, is warmed in a cauldron, and thickened with rennet, and then the curd is pressed into cheeses, which are little, and well tasted. These are never found to breed mites as the cheese of other countries, probably because the mite-fly is not to be found in Lapland. The whey which remains is warmed up again, and becomes of a consistence as if thickened with the white of eggs. Upon this the Laplanders feed during the summer; it is pleasant and well tasted, but not very nourishing. As to butter, they very seldom make any, because the milk affords but a very small quantity, and this, both in taste and consistence, is more nearly resembling to suet. They never keep their milk till it turns sour; and do not dress it into the variety of dishes which the more southern countries are known to do. The only delicacy they make from it is with wood-sorrel, which being boiled up with it, and coagulating, the whole is put into casks or deer-skins, and kept under ground to be eaten in winter.

The skin is even a more valuable part of this animal than either of the former. From that part of it which covered the head and feet, they make their strong snow-shoes, with the hair on the outside. Of the other parts they compose their garments, which are extremely warm, and which cover them all over. The hair of these also is on the outside; and they sometimes line them with the fur of the glutton, or some other warm-furred

animal of that climate. These skins also serve them for beds. They spread them on each side of the fire, upon some leaves of the dwarf birch tree, and in this manner lie both soft and warm. Many garments made of the skin of the rein-deer are sold every year to the inhabitants of the more southern parts of Europe; and they are found so serviceable in keeping out the cold, that even people of the first rank are known to wear them.

In short, no part of this animal is thrown away as useless. The blood is preserved in small casks to make sauce with the marrow in spring. The horns are sold to be converted into glue. The sinews are dried, and divided so as to make the strongest kind of sewing thread, not unlike cat-gut. The tongues, which are considered as a great delicacy, are dried, and sold into the more southern provinces. The intestines themselves are washed like our tripe, and in high esteem among the natives. Thus the Laplander finds all his necessities amply supplied from this single animal; and he who has a large herd of these animals has no idea of higher luxury.

But although the rein-deer be a very hardy and vigorous animal, it is not without its diseases. I have already mentioned the pain it feels from the gnat, and the apprehensions it is under from the gadfly. Its hide is often found pierced in a hundred places like a sieve from this insect, and not a few die in their third year from this very cause. Their teats also are subject to cracking, so that blood comes instead of milk. They sometimes take a loathing for their food, and instead of eat-

ing, stand still and chew the cud. They are also troubled with a vertigo, like the elk, and turn round often till they die. The Laplander judges of their state by the manner of their turning: if they turn to the right, he judges their disorder but slight; if they turn to the left, he deems it incurable. The rein-deer are also subject to ulcers near the hoof, which unqualifies them for travelling, or keeping with the herd. But the most fatal disorder of all is that which the natives call the *suddataka*, which attacks this animal at all seasons of the year. The instant it is seized with this disease, it begins to breathe with great difficulty, its eyes begin to stare, and its nostrils to expand. It acquires also an unusual degree of ferocity, and attacks all it meets indiscriminately. Still, however, it continues to feed as if in health, but is not seen to chew the cud, and it lies down more frequently than before. In this manner it continues, every day consuming, and growing more lean, till at last it dies from mere inanition; and not one of those that are attacked with this disorder are ever found to recover. Notwithstanding, it is but very lately known in that part of the world, although during the last ten or fifteen years it has spoiled whole provinces of this necessary creature. It is contagious; and the moment the Laplander perceives any of his herd infected, he hastens to kill them immediately, before it spreads any farther. When examined internally, there is a frothy substance found in the brain, and round the lungs, the intestines are lax and flabby, and the spleen is diminished almost to

nothing. The Laplander's only cure in all these disorders is to anoint the animal's back with tar; if this does not succeed, he considers the disease as beyond the power of art, and with his natural phlegm submits to the severities of fortune.

Besides the internal maladies of this animal, there are some external enemies which it has to fear. The bears now and then make depredations upon the herd; but, of all their persecutors, the creature called the *glutton* is the most dangerous, and the most successful. The war between these is carried on not less in Lapland than in North America, where the rein-deer is called the *caribou*, and the glutton the *carcajou*. This animal, which is not above the size of a badger, waits whole weeks together for its prey, hid in the branches of some spreading tree; and when the wild rein-deer passes underneath, it instantly drops down upon it, fixing its teeth and claws into the neck, just behind the horns. It is in vain that the wounded animal then flies for protection, that it rustles among the branches of the forest; the glutton still holds its former position; and although it often loses a part of its skin and flesh, which are rubbed off against the trees, yet it still keeps fast, until its prey drops with fatigue and loss of blood. The deer has but one only method of escape, which is by jumping into the water: that element its enemy cannot endure; for, as we are told, it quits its hold immediately, and then thinks only of providing for its own proper security.

CHAPTER XIX.

OF QUADRUPEDS OF THE HOG KIND.

ANIMALS of the hog kind seem to unite in themselves all those distinctions by which others are separated. They resemble those of the horse kind in the number of their teeth, which in all amount to forty-four, in the length of their head, and in having but a single stomach: they resemble the cow kind in their cloven hoofs and the position of their intestines; and they resemble those of the claw-footed kind in their appetite for flesh, in their not chewing the cud, and in their numerous progeny. Thus this species serves to fill up that chasm which is found between the carnivorous kinds and those that live upon grass; being possessed of the ravenous appetite of the one, and the inoffensive nature of the other. We may consider them, therefore, as of a middle nature, which we can refer neither to the rapacious nor the peaceful kinds, and yet partaking somewhat of the nature of both. Like the rapacious kinds, they are found to have short intestines; their hoofs also, though cloven to the sight, will, upon anatomical inspection, appear to be supplied with bones like beasts of prey; and the number of their teats also increase the similitude: on the other hand, in a natural state they live upon vegetables, and seldom seek after animal food except when urged by necessity. They offend no other

animal of the forest, at the same time that they are furnished with arms to terrify the bravest.*

The Wild Boar, which is the original of all the varieties we find in this creature, is by no means so stupid nor so filthy an animal as that we have reduced to tameness: he is much smaller than the tame hog, and does not vary in his colour as those of the domestic kind do, but is always found of an iron grey, inclining to black; his snout is much longer than that of the tame hog, and the ears are shorter, rounder, and black, of which colour are also the feet and the tail. He roots the ground in a different manner from the common hog; for as this turns up the earth in little spots here and there, so the wild boar ploughs it up like a furrow, and does irreparable damage in the cultivated lands of the farmer. The tusks also of this animal are larger than in the tame breed, some of them being seen almost a foot long.† These, as is well known, grow from both the under and upper jaw, bend upwards circularly, and are exceedingly sharp at the points. They differ from the tusks of the elephant in this, that they never fall; and it is remarkable of all the hog kind, that they never shed their teeth, as

[* Quadrupeds of this kind have four cutting teeth in the upper jaw, whose points converge; and for the most part six in the lower jaw, which stand forwards: There are two tusks in each jaw, those in the upper jaw being short, while those of the under jaw are long, and extend out of the mouth. The snout is prominent, moveable, and has the appearance of having been cut off, or truncated. The feet are armed with divided or cloven hoofs.]

† Buffon, vol. ix. p. 147.

other animals are seen to do. The tusks of the lower jaw are always the most to be dreaded, and are found to give very terrible wounds.

The wild boar can properly be called neither a solitary nor a gregarious animal. The three first years the whole litter follows the sow, and the family lives in a herd together. They are then called beasts of company, and unite their common forces against the invasions of the wolf, or the more formidable beasts of prey. Upon this their principal safety while young depends; for when attacked they give each other mutual assistance, calling to each other with a very loud and fierce note: the strongest face the danger; they form a ring, and the weakest fall into the centre. In this position few ravenous beasts dare venture to attack them, but pursue the chase where there is less resistance and danger. However, when the wild boar is come to a state of maturity, and when conscious of his own superior strength, he then walks the forest alone and fearless. At that time he dreads no single creature, nor does he turn out of his way even for man himself. He does not seek danger, and he does not much seem to avoid it.

This animal is therefore seldom attacked but at a disadvantage, either by numbers, or when found sleeping by moon-light. The hunting the wild boar is one of the principal amusements of the nobility in those countries where it is to be found. The dogs provided for this sport are of the slow heavy kind. Those used for hunting the stag or the roebuck would be very improper, as they

would too soon come up with their prey, and, instead of a chase, would only furnish out an engagement. A small mastiff is therefore chosen; nor are the hunters much mindful of the goodness of their nose, as the wild boar leaves so strong a scent that it is impossible for them to mistake its course. They never hunt any but the largest and the oldest, which are known by their tracks. When the boar is *rear'd*, as is the expression for driving him from his covert, he goes slowly and uniformly forward, not much afraid, nor very far before his pursuers. At the end of every half mile, or thereabouts, he turns round, stops till the hounds come up, and offers to attack them. These, on the other hand, knowing their danger, keep off, and bay him at a distance. After they have for a while gazed upon each other with mutual animosity, the boar again slowly goes on his course, and the dogs renew their pursuit. In this manner the charge is sustained, and the chase continues till the boar is quite tired, and refuses to go any farther. The dogs then attempt to close in upon him from behind; those which are young, fierce, and unaccustomed to the chase, are generally the foremost, and often lose their lives by their ardour. Those which are older and better trained are content to wait until the hunters come up, who strike at him with their spears, and, after several blows, dispatch or disable him. The instant the animal is killed they cut off the testicles, which would otherwise give a taint to the flesh; and the huntsmen celebrate the victory with their horns.

The Hog, in a natural state, is found to feed chiefly upon roots and vegetables; it seldom attacks any other animal, being content with such provisions as it procures without danger. Whatever animal happens to die in the forest, or is so wounded that it can make no resistance, becomes a prey to the hog, who seldom refuses animal food, how putrid soever, although it is never at the pains of taking or procuring it alive. For this reason it seems a glutton rather by accident than choice, content with vegetable food, and only devouring flesh when pressed by necessity, and when it happens to offer. Indeed, if we behold the hog in its domestic state, it is the most sordid and brutal animal in nature.* The awkwardness of its form seems to influence its appetites, and all its sensations are as gross as its shapes are unsightly. It seems possessed only of an insatiable desire of eating; and it seems to make choice only of what other animals find the most offensive. But we ought to consider, that the hog with us is in an unnatural state, and that it is in a manner compelled to feed in this filthy manner, from wanting that proper nourishment which it finds in the forest. When in a state of wildness, it is of all other quadrupeds the most delicate in the choice of what vegetable it shall feed on, and rejects a greater number than any of the rest. The cow, for instance, as we are assured by Linnæus, eats two hundred and seventy-six plants, and rejects two hundred and eighteen;

* Buffon, vol. ix. p. 14.

the goat eats four hundred and forty-nine, and rejects a hundred and twenty-six; the sheep eats three hundred and eighty-seven, and rejects a hundred and forty-one; the horse eats two hundred and sixty-two, and rejects two hundred and twelve; but the hog, more nice in its provision than any of the former, eats but seventy-two plants, and rejects a hundred and seventy-one. The indelicacy of this animal is, therefore, rather in our apprehensions than in its nature; since we find it makes a very distinguishing choice in the quality of its food; and if it does not reject animal putrefaction, it may be because it is abridged in that food which is most wholesome and agreeable to it in a state of nature. This is certain, that its palate is not insensible to the difference of eatables; for, where it finds variety, it will reject the worst, with as distinguishing a taste as any other quadruped whatsoever.* In the orchards of peach trees in North America, where the hog has plenty of delicious food, it is observed, that it will reject the fruit that has lain but a few hours on the ground, and continue on the watch whole hours together for a fresh windfall.

However, the hog is naturally formed in a more imperfect manner than the other animals that we have rendered domestic around us, less active in its motions, less furnished with instinct in knowing what to pursue or avoid. Without attachment, and incapable of instruction, it continues, while it lives, an useless, or rather a rapa-

* British Zoology, vol. i. p. 42.

cious dependant. The coarseness of its hair, and the thickness of its hide, together with the thick coat of fat that lies immediately under the skin, render it insensible to blows or rough usage. Mice have been known to burrow in the back of these animals while fattening in the sty,* without their seeming to perceive it. Their other senses seem to be in tolerable perfection; they scent the hounds at a distance; and, as we have seen, they are not insensible in the choice of their provisions.

The hog is, by nature, stupid, inactive, and drowsy; if undisturbed, it would sleep half its time; but it is frequently awaked by the calls of appetite, which when it has satisfied, it goes to rest again. Its whole life is thus a round of sleep and gluttony; and, if supplied with sufficient food, it soon grows unfit even for its own existence; its flesh becomes a greater load than its legs are able to support, and it continues to feed lying down, or kneeling, a helpless instance of indulged sensuality. The only time it seems to have passions of a more active nature, are when it is incited by venery, or when the wind blows with any vehemence. Upon this occasion it is so agitated as to run violently towards its sty, screaming horribly at the same time, which seems to argue that it is naturally fond of a warm climate. It appears also to foresee the approach of bad weather, bringing straw to its sty in its mouth, preparing a bed, and hiding itself from the

* Buffon.

impending storm. Nor is it less agitated when it hears any of its kind in distress: when a hog is caught in a gate, as is often the case, or when it suffers any of the usual domestic operations of ringing or spaying, all the rest are then seen to gather round it, to lend their fruitless assistance, and to sympathize with its sufferings. They have often also been known to gather round a dog that had teased them, and kill him upon the spot.

Most of the diseases of this animal arise from intemperance; measles, imposthumes, and scrophulous swellings, are reckoned among the number. It is thought by some that they wallow in the mire to destroy a sort of louse or insect that is often found to infest them; however, they are generally known to live, when so permitted, to eighteen or twenty years; and the females produce till the age of fifteen. As they produce from ten to twenty young at a litter, and that twice a-year, we may easily compute how numerous they would shortly become, if not diminished by human industry. In the wild state they are less prolific; and the sow of the woods brings forth but once a-year, probably because exhausted by rearing up her former numerous progeny.

It would be superfluous to dwell longer upon the nature and qualities of an animal too well known to need a description: there are few, even in cities, who are unacquainted with its uses, its appetites, and way of living. The arts of fattening, rearing, guarding, and managing hogs, fall more properly under the cognizance of the farmer

than the naturalist; they make a branch of domestic economy, which, properly treated, may be extended to a great length: but the history of nature ought always to end where that of art begins. It will be sufficient, therefore, to observe, that the wild boar was formerly a native of our country, as appears from the laws of Hoeldda,* the famous Welsh legislator, who permitted his grand huntsman to chase that animal from the middle of November to the beginning of December. William the Conqueror also punished such as were convicted of killing the wild boar in his forests, with the loss of their eyes. At present the whole wild breed is extinct; but no country makes greater use of the tame kinds, as their flesh, which bears salt better than that of any other animal, makes a principal part of the provisions of the British navy.

As this animal is a native of almost every country, there are some varieties found in the species. That which we call the East India breed, is lower, less furnished with hair, is usually black, and has the belly almost touching the ground; it is now common in England, it fattens more easily than the ordinary kinds, and makes better bacon.

There is a remarkable variety of this animal about Upsal,† which is single hoofed, like the horse, but in no other respect differing from the common kinds. The authority of Aristotle, who first made mention of this kind, has been often called into question: some have asserted, that

* British Zoology, vol. i. p. 44. † Amœnit. Acad. vol. v. p. 465.

such a quadruped never existed, because it happened not to fall within the sphere of their own confined observation; however, at present, the animal is too well known to admit of any doubt concerning it. The hog common in Guinea differs also in some things from our own; though shaped exactly as ours, it is of a reddish colour, with long ears, which end in a sharp point, and a tail which hangs down to the pastern; the whole body is covered with short red shining hair, without any bristles, but pretty long near the tail. Their flesh is said to be excellent, and they are very tame.

All these, from their near resemblance to the hog, may be considered as of the same species. The East Indian hog, we well know, breeds with the common kind; whether the same obtains between it and those of Upsal and Guinea, we cannot directly affirm; but where the external similitude is so strong, we may be induced to believe that the appetites and habits are the same. It is true, we are told that the Guinea breed will not mix with ours, but keep separate, and herd only together: however, this is no proof of their diversity, since every animal will prefer its own likeness in its mate, and they will only then mix with another sort, when deprived of the society of their own. These, therefore, we may consider as all of the hog kind; but there are other quadrupeds, that, in general, resemble this species, which nevertheless are very distinct from them. Travellers, indeed, from their general form, or from their habits and way of living, have been

content to call these creatures hogs also; but, upon a closer inspection, their differences are found to be such as entirely to separate the kinds, and make each a distinct animal by itself.

THE PECCARY, OR TAJACU.

THAT animal which of all others most resembles the hog, and yet is of a formation very distinct from it, is called the Peccary, or Tajacu. It is a native of America, and found there in such numbers, that they are seen in herds of several hundreds together, grazing among the woods, and inoffensive, except when offended.

The Peccary at first view resembles a small hog; the form of its body, the shape of its head, the length of its snout, and the form of its legs, are entirely alike: however, when we come to examine it nearer, the differences begin to appear. The body is not so bulky; its legs not so long; its bristles much thicker and stronger than those of the hog, resembling rather the quills of a porcupine than hair; instead of a tail it has only a little fleshy protuberance, which does not even cover its posteriors: but that which is still more extraordinary, and in which it differs from all other quadrupeds whatsoever, is, that it has got upon its back a lump resembling the navel in other animals, which is found to suppurate a liquor of a very strong smell. The peccary is the only creature that has those kind of glands which dis-

charge the musky substance on that part of its body. Some have them under the belly, and others under the tail; but this creature, by a conformation peculiar to itself, has them on its back. This lump, or navel, is situated on that part of the back which is over the hinder legs; it is, in general, so covered with long bristles that it cannot be seen, except they be drawn aside. A small space then appears, that is almost bare, and only beset with a few short fine hairs. In the middle it rises like a lump; and in this there is an orifice, into which one may thrust a common goose-quill. This hole or bag is not above an inch in depth; and round it, under the skin, are situated a number of small glands, which distil a whitish liquor, in colour and substance resembling that obtained from the civet animal. Perhaps it was this analogy that led Dr Tyson to say that it smelt agreeably also, like that perfume. But this M. Buffon absolutely denies; affirming, that the smell is at every time, and in every proportion, strong and offensive; and to this I can add my own testimony, if that able naturalist should want a voucher.

But, to be more particular in the description of the other parts of this quadruped: the colour of the body is gristly, and beset with bristles thicker and stronger than those of a common hog; though not near so thick as those of a porcupine, they resemble them in this respect, that they are variegated with black and white rings. The belly is almost bare; and the short bristles on the sides gradually increase in length as they ap-

proach the ridge of the back, where some are five inches long. On the head also, between the ears, there is a large tuft of bristles, that are chiefly black. The ears are about two inches and a half long, and stand upright; and the eyes resemble those of a common hog, only they are smaller. From the lower corner of the eye to the snout is usually six inches; and the snout itself is like that of a hog, though it is but small. One side of the lower lip is generally smooth, by the rubbing of the tusk of the upper jaw. The feet and hoofs are perfectly like those of a common hog; but, as was already observed, it has no tail. There are some anatomical differences in its internal structure, from that of the common hog. Dr Tyson was led to suppose that it had three stomachs, whereas the hog has but one: however, in this he was deceived, as M. Daubenton has plainly shown that the stomach is only divided by two closings, which gives it the appearance as if divided into three; and there is no conformation that prevents the food in any part of it from going or returning to any other.

The peccary may be tamed like the hog, and has pretty nearly the same habits and natural inclinations. It feeds upon the same aliments; its flesh, though drier and leaner than that of the hog, is pretty good eating; it is improved by castration; and, when killed, not only the parts of generation must be taken instantly away, but also the navel on the back, with all the glands that contribute to its supply. If this operation

be deferred for only half an hour, the flesh becomes utterly unfit to be eaten.

The peccary is extremely numerous in all the parts of Southern America. They go in herds of two or three hundred together, and unite, like hogs, in each other's defence. They are particularly fierce when their young are attempted to be taken from them. They surround the plunderer, attack him without fear, and frequently make his life pay the forfeit of his rashness. When any of the natives are pursued by a herd in this manner, they frequently climb a tree to avoid them; while the peccaries gather round the root, threaten with their tusks, and their rough bristles standing erect, as in the hog kind, they assume a very terrible appearance. In this manner they remain at the foot of the tree for hours together; while the hunter is obliged to wait patiently, and not without apprehensions, until they think fit to retire.

The peccary is rather fond of the mountainous parts of the country than the lowlands; it seems to delight neither in the marshes nor the mud, like our hogs; it keeps among the woods, where it subsists upon wild fruits, roots, and vegetables; it is also an unceasing enemy to the lizard, the toad, and all the serpent kinds, with which these uncultivated forests abound. As soon as it perceives a serpent, or a viper, it at once seizes it with its fore hoofs and teeth, skins it in an instant, and devours the flesh. This is often seen, and may, therefore, be readily credited; but as to its applying to a proper vegetable immediately

after, as an antidote to the poison of the animal it had devoured, this part of the relation we may very well suspect. The flesh neither of the toad nor viper, as every one now knows, are poisonous; and therefore there is no need of a remedy against their venom. Ray gives no credit to either part of the account; however, we can have no reason to disbelieve that it feeds upon toads and serpents; it is only the making use of a vegetable antidote that appears improbable, and which perhaps had its rise in the ignorance and credulity of the natives.

The peccary, like the hog, is very prolific; the young ones follow the dam, and do not separate till they have come to perfection. If taken at first, they are very easily tamed, and soon lose all their natural ferocity; however, they never show any remarkable signs of docility, but continue stupid and rude, without attachment, or even seeming to know the hand that feeds them. They only continue to do no mischief, and they may be permitted to run tame without apprehending any dangerous consequences. They seldom stray far from home; they return of themselves to the sty; and do not quarrel among each other, except when they happen to be fed in common. At such times they have an angry kind of growl, much stronger and harsher than that of a hog; but they are seldom heard to scream as the former, only now and then, when frighted or irritated, they have an abrupt angry manner of blowing like the boar.

The peccary, though like the hog in so many various respects, is nevertheless a very distinct race, and will not mix, nor produce an intermediate breed. The European hog has been transplanted into America, and suffered to run wild among the woods; it is often seen to herd among a drove of peccaries, but never to breed from them. They may therefore be considered as two distinct creatures: the hog is the larger and the more useful animal, the peccary more feeble and local; the hog subsists in most parts of the world, and in almost every climate; the peccary is a native of the warmer regions, and cannot subsist in ours without shelter and assistance. It is more than probable, however, that we could readily propagate the breed of this quadruped, and that, in two or three generations, it might be familiarized to our climate; but as it is inferior to the hog in every respect, so it would be needless to admit a new domestic, whose services are better supplied in the old.

THE CAPIBARA, OR CABIAI.

THERE are some quadrupeds so entirely different from any that we are acquainted with, that it is hard to find a well known animal to which to resemble them. In this case, we must be content to place them near such as they most approach in form and habits, so that the reader may at once have some idea of the creature's shape or disposi-

tion, although, perhaps, an inadequate and a very confused one.

Upon that confused idea, however, it will be our business to work; to bring it by degrees to greater precision; to mark out the differences of form, and thus give the clearest notions that words can easily convey. The known animal is a kind of rude sketch of the figure we want to exhibit; from which, by degrees, we fashion out the shape of the creature we desire should be known; as a statuary seldom begins his work till the rude outline of the figure is given by some other hand.—In this manner, I have placed the Capibara among the hog kind, merely because it is more like a hog than any other animal commonly known; and yet, more closely examined, it will be found to differ in some of the most obvious particulars.

The Capibara resembles a hog of about two years old, in the shape of its body, and the coarseness and colour of its hair. Like the hog, it has a thick short neck, and a rounded bristly back; like the hog, it is fond of the water and marshy places, brings forth many at a time, and, like it, feeds upon animal and vegetable food. But, when examined more nearly, the differences are many and obvious. The head is longer, the eyes are larger, and the snout, instead of being rounded as in the hog, is split, like that of a rabbit or a hare, and furnished with thick strong whiskers; the mouth is not so wide, the number and the form of the teeth are different, for it is without tusks: like the peccary, it wants a tail; and, unlike to all others of this kind, instead of a cloven

hoof, it is in a manner web-footed, and thus entirely fitted for swimming and living in the water. The hoofs before are divided into four parts, and those behind into three; between the divisions there is a prolongation of the skin, so that the foot, when spread in swimming, can beat a greater surface of water.

As its feet are thus made for the water, so it is seen to delight entirely in that element; and some naturalists have called it the *Water-hog* for that reason. It is a native of South America, and is chiefly seen frequenting the borders of lakes and rivers, like the otter. It seizes the fish upon which it preys with its hoofs and teeth, and carries them to the edge of the lake, to devour them at its ease. It lives also upon fruits, corn, and sugar-canes. As its feet are long and broad, it is often seen sitting up, like a dog that is taught to beg. Its cry more nearly resembles the braying of an ass, than the grunting of a hog. It seldom goes out, except at night, and that always in company. It never ventures far from the sides of the river or the lake in which it preys; for as it runs ill, because of the length of its feet and the shortness of its legs, so its only place of safety is the water, into which it immediately plunges when pursued, and keeps so long at the bottom that the hunter can have no hopes of taking it there. The capibara, even in a state of wildness, is of a gentle nature, and, when taken young, is easily tamed. It comes and goes at command, and even shows an attachment to its keeper. Its flesh is said to be fat and tender, but, from the nature of its food,

it has a fishy taste, like that of all those which are bred in the water. Its head, however, is said to be excellent; and in this it resembles the beaver, whose fore parts taste like flesh, and the hinder like the fish it feeds on.

THE BABYROUESSA, OR INDIAN HOG.

THE Babyrouessa is still more remote from the hog kind than the capibara; and yet most travellers who have described this animal do not scruple to call it the Hog of Borneo, which is an island in the East Indies where it is principally to be found. Probably this animal's figure upon the whole most resembles that of the hog kind, and may have induced them to rank it among the number; however, when they come to its description, they represent it as having neither the hair, the bristles, the head, the stature, nor the tail of a hog. Its legs, we are told, are longer, its snout shorter, its body more slender, and somewhat resembling that of a stag; its hair is finer, of a grey colour, rather resembling wool than bristles, and its tail also tufted with the same. From these varieties, therefore, it can scarcely be called a hog; and yet in this class we must be content to rank it, until its form and nature come to be better known. What we at present principally distinguish it by, are the enormous tusks that grow out of each jaw; the two largest from the upper, and the two smallest from the under. The jaw-

bones of this extraordinary animal are found to be very thick and strong, from whence these monstrous tusks are seen to proceed that distinguish it from all other quadrupeds whatsoever. The two that go from the lower jaw are not above a foot long, but those of the upper are above half a yard: as in the boar, they bend circularly, and the two lower stand in the jaw as they are seen to do in that animal; but the two upper rise from the upper jaw rather like horns than teeth, and bending upwards and backwards, sometimes have their points directed to the animal's eyes, and are often fatal by growing into them. Were it not that the babyrouessa has two such large teeth underneath, we might easily suppose the two upper to be horns; and in fact their sockets are directed upwards, for which reason Dr Grew was of that opinion. But as the teeth of both jaws are of the same consistence, and as they both grow out of sockets in the same manner, the analogy between both is too strong not to suppose them of the same nature. The upper teeth, when they leave the socket, immediately pierce the upper lips of the animal, and grow as if they immediately went from its cheek. The tusks in both jaws are of a very fine ivory, smoother and whiter than that of the elephant, but not so hard or serviceable.

These enormous tusks give this animal a very formidable appearance, and yet it is thought to be much less dangerous than the wild boar.* Like

* Buffon, vol. xxv. p. 179.

animals of the hog kind, they go together in a body, and are often seen in company with the wild boar, with which, however, they are never known to engender. They have a very strong scent, which discovers them to the hounds; and when pursued they growl dreadfully, often turning back upon the dogs, and wounding them with the tusks of the lower jaw, for those of the upper are rather an obstruction than a defence. They run much swifter than the boar, and have a more exquisite scent, winding the men and the dogs at a great distance. When hunted closely they generally plunge themselves into the sea, where they swim with great swiftness and facility, diving and rising again at pleasure; and in this manner they most frequently escape their pursuers. Although fierce and terrible when offended, yet they are peaceable and harmless when unmolested. They are easily tamed, and their flesh is good to be eaten; but it is said to putrefy in a very short time. They have a way of reposing themselves different from most other animals of the larger kind, which is by hitching one of their upper tusks on the branch of a tree, and then suffering their whole body to swing down at ease. Thus suspended from a tooth, they continue the whole night quite secure, and out of the reach of such animals as hunt them for prey.

The babyrouessa, though by its teeth and tusks it seems fitted for a state of hostility, and probably is carnivorous, yet nevertheless seems chiefly to live upon vegetables and the leaves of trees. It seldom seeks to break into gardens, like the

boar, in order to pillage the more succulent productions of human industry, but lives remote from mankind, content with coarser fare and security. It has been said that it was only to be found in the island of Borneo; but this is a mistake, as it is well known in many other parts both of Asia and Africa, as at the Celebes, Estrila, Senegal, and Madagascar.*

Such are the animals of the hog kind, which are not distinctly known; and even all these, as we see, have been but imperfectly examined or described. There are some others of which we have still more imperfect notices; such as the Waree, a hog of the Isthmus of Darien, described by Wafer, with large tusks, small ears, and bristles like a coarse fur over all the body. This, however, may be the European hog, which has run wild in that part of the new world, as no other traveller has taken notice of the same. The Canary boar seems different from other animals of this kind by the largeness of its tusks, and, as is judged from the skeleton, by the aperture of its nostrils, and the number of its grinders. I cannot conclude this account of those animals that are thus furnished with enormous tusks, without observing, that there is a strong consent between these and the parts of generation. When castrated, it is well known that the tusks grow much smaller, and are scarcely seen to appear without the lips; but what is still more remarkable is, that in a boar, if the tusks by any accident or de-

* Anderson's Natural History of Greenland.

sign be broke away, the animal abates of its fierceness and venery, and it produces nearly the same effect upon its constitution as if castration had actually taken place.*

CHAPTER XX.

ANIMALS OF THE CAT KIND.

We have hitherto been describing a class of peaceful and harmless animals, that serve as the instruments of man's happiness, or at least that do not openly oppose him. We come now to a bloody and unrelenting tribe, that disdain to own his power, and carry on unceasing hostilities against him. All the class of the cat kind are chiefly distinguished by their sharp and formidable claws, which they can hide and extend at pleasure. They lead a solitary ravenous life, neither uniting for their mutual defence, like vegetable feeders, nor for their mutual support, like those of the dog kind. The whole of this cruel and ferocious tribe seek their food alone, and, except at certain seasons, are even enemies to each other. The dog, the wolf, and the bear, are sometimes known to live upon vegetables or farinaceous food; but all of the cat kind, such as the lion, the tiger, the leopard, and the ounce, devour nothing but flesh, and starve upon any other provision.

* Lisle's Husbandry, vol. ii. p. 329.

They are in general fierce, rapacious, subtle, and cruel, unfit for society among each other, and incapable of adding to human happiness. However, it is probable that even the fiercest could be rendered domestic, if man thought the conquest worth the trouble. Lions have been yoked to the chariots of conquerors, and tigers have been taught to tend those herds which they are known at present to destroy; but these services are not sufficient to recompense for the trouble of their keeping; so that ceasing to be useful, they continue to be noxious, and become rebellious subjects because not taken under equal protection with the rest of the brute creation.

Other tribes of animals are classed with difficulty, having often but few points of resemblance, and though alike in form, have different dispositions, and different appetites. But all those of the cat kind, although differing in size or in colour, are yet nearly allied to each other, being equally fierce, rapacious, and artful, and he that has seen one has seen all. In other creatures there are many changes wrought by human assiduity; the dog, the hog, or the sheep, are altered in their natures and forms, just as the necessities or the caprice of mankind have found fitting; but all of this kind are inflexible in their forms, and wear the print of their natural wildness strong upon them. The dogs or cows vary in different countries, but lions or tigers are still found the same; the very colour is nearly alike in all, and the slightest alterations are sufficient to make a difference in the

kinds, and to give the animal a different denomination.

The cat kind are not less remarkable for the sharpness and strength of their claws, which thrust forth from their sheath when they seize their prey, than for the shortness of their snout, the roundness of their head, and the large whiskers which grow on the upper lip. Their teeth also, which amount to the number of thirty, are very formidable, but are rather calculated for tearing their prey than for chewing it:* for this reason they feed but slowly, and while they eat generally continue growling, to deter others from taking a share. In the dog kind, the chief power lies in the under jaw, which is long, and furnished with muscles of amazing strength; but in these, the greatest force lies in the claws, which are extended with great ease, and their gripe is so tenacious that nothing can open it. The hinder parts in all these animals are much weaker than those before, and they seem less made for strength than agility. Nor are they endued with the swiftness of most other animals, but generally owe their subsistence rather to catching their prey by surprise than by hunting it fairly down. They all seize it with a bound, at the same time expressing their fierce pleasure with a roar; and the first grasp generally disables the captive from all further resistance. With all these qualifications for slaughter, they nevertheless seem timid and cowardly, and seldom

[* In quadrupeds of this kind the fore-teeth are equal, the grinders have three points, the tongue is furnished with rough sharp prickles, pointing backwards, and the claws are sheathed and retractile.]

make an attack, like those of the dog kind, at a disadvantage; on the contrary, they fly when the force against them is superior, or even equal to their own, and the lion himself will not venture to make a second attempt where he has been once repulsed with success. For this reason, in countries that are tolerably inhabited, the lion is so cowardly that he is often scared away by the cries of women and children.

The Cat, which is the smallest animal of this kind, is the only one that has been taken under human protection, and may be considered as a faithless friend, brought to oppose a still more insidious enemy.* It is, in fact, the only animal of this tribe whose services can more than recompense the trouble of their education, and whose strength is not sufficient to make its anger formidable. The lion or the tiger may easily be tamed, and rendered subservient to human command; but, even in their humblest and most familiar moments, they are still dangerous; since their strength is such, that the smallest fit of anger or caprice may have dreadful consequences. But the cat, though easily offended, and often capricious in her resentments, is not endowed with powers sufficient to do any great mischief. Of all animals, when young, there is none more prettily playful than the kitten; but it seems to lose this disposition as it grows old, and the innate treachery of its kind is then seen to prevail. From being naturally ravenous, education

* This description is nearly translated from M. Buffon: what I have added is marked with inverted commas.

teaches it to disguise its appetites, and to watch the favourable moment of plunder: supple, insinuating, and artful, it has learnt the arts of concealing its intentions till it can put them into execution; when the opportunity offers, it at once seizes upon whatever it finds, flies off with it, and continues at a distance till it supposes its offence forgotten. The cat has only the appearance of attachment; and it may easily be perceived, by its timid approaches, and side-long looks, that it either dreads its master, or distrusts his kindness: different from the dog, whose caresses are sincere, the cat is assiduous rather for its own pleasure, than to please, and often gains confidence only to abuse it. The form of its body and its temperament correspond with its disposition; active, cleanly, delicate, and voluptuous, it loves its ease, and seeks the softest cushions to lie on. "Many of its habits, however, are rather the consequences of its formation, than the result of any perverseness in its disposition: it is timid and mistrustful, because its body is weak, and its skin tender; a blow hurts it infinitely more than it does a dog, whose hide is thick, and body muscular; the long fur in which the cat is clothed, entirely disguises its shape, which, if seen naked, is long, feeble, and slender: it is not to be wondered, therefore, that it appears much more fearful of chastisement than the dog, and often flies, even when no correction is intended. Being also a native of the warmer climates, as will be shown hereafter, it chooses the softest bed to lie on, which is always the warmest."

The cat goes with young fifty-six days, and seldom brings forth above five or six at a time. The female usually hides the place of her retreat from the male, who is often found to devour her kittens. She feeds them for some weeks with her milk, and whatever small animal she can take by surprise, accustoming them betimes to rapine. Before they are a year old, they are fit to engender; the female seeks the male with cries; nor is their copulation performed without great pain, from the narrowness of the passage in the female. They live to about the age of ten years; and, during that period, they are extremely vivacious, suffering to be worried a long time before they die.

The young kittens are very playful and amusing; but their sport soon turns into malice, and they, from the beginning, show a disposition to cruelty: they often look wistfully towards the cage, sit sentinels at the mouth of a mouse-hole, and in a short time become more expert hunters than if they had received the instruction of art. Indeed, their disposition is so incapable of constraint, that all instruction would be but thrown away. It is true, that we are told of the Greek monks of the Isle of Cyprus teaching cats to hunt the serpents with which the island is infested; but this may be natural to the animal itself, and they might have fallen upon such a pursuit without any instruction. Whatever animal is much weaker than themselves, is to them an indiscriminate object of destruction. Birds, young rabbits, hares, rats and mice, bats, moles, toads, and

frogs, are all equally pursued, though not, perhaps, equally acceptable. The mouse seems to be their favourite game; and although the cat has the sense of smelling in but a mean degree, it nevertheless knows those holes in which its prey resides. I have seen one of them patiently watch a whole day until the mouse appeared, and continue quite motionless until it came within reach, and then seized it with a jump. Of all the marks by which the cat discovers its natural malignity, that of playing and sporting with its little captive, before killing it outright, is the most flagrant.

The fixed inclination which they discover for this peculiar manner of pursuit, arises from the conformation of their eyes. The pupil in man, and in most other animals, is capable but of a small degree of contraction and dilatation; it enlarges a little in the dark, and contracts when the light pours in upon it in too great quantities. In the eyes of cats, however, this contraction and dilatation of the pupil is so considerable, that the pupil, which by day-light appears narrow and small, like the black of one's nail, by night expands over the whole surface of the eye-ball, and, as every one must have seen, their eyes seem on fire. By this peculiar conformation, their eyes see better in darkness than light; and the animal is thus better adapted for spying out and surprising its prey.

Although the cat is an inhabitant of our houses, yet it cannot properly be called a dependant; although perfectly tame, yet it acknowledges no

obedience; on the contrary, it does only just what it thinks fit, and no art can controul any of its inclinations. In general, it is but half tamed, and has its attachments rather to the place in which it resides, than to the inhabitant. If the inhabitant quits the house, the cat still remains; and if carried elsewhere, seems for a while bewildered with its new situation. It must take time to become acquainted with the holes and retreats in which its prey resides, with all the little labyrinths through which they often make good an escape.

The cat is particularly fearful of water, of cold, and of ill smells. It loves to keep in the sun, to get near the fire, and to rub itself against those who carry perfumes. It is excessively fond of some plants, such as valerian, marum, and catmint; against these it rubs, smells them at a distance, and at last, if they be planted in a garden, wears them out.

This animal eats slowly, and with difficulty, as its teeth are rather made for tearing than chewing its aliments. For this reason it loves the most tender food, particularly fish, which it eats as well boiled as raw. Its sleeping is very light; and it often seems to sleep, the better to deceive its prey. When the cat walks, it treads very softly, and without the least noise; and as to the necessities of nature, it is cleanly to the last degree. Its fur also is usually sleek and glossy; and, for this reason, the hair is easily electrified, sending forth shining sparks, if rubbed in the dark.

"The wild cat breeds with the tame;* and therefore the latter may be considered only as a variety of the former: however, they differ in some particulars; the cat, in its savage state, is somewhat larger than the house cat; and its fur being longer, gives it a greater appearance than it really has: its head is bigger, and face flatter; the teeth and claws much more formidable; its muscles very strong, as being formed for rapine; the tail is of a moderate length, but very thick and flat, marked with alternate bars of black and white, the end always black; the hips, and hind part of the lower joints of the leg, are always black; the fur is very soft and fine: the general colour of these animals, in England, is a yellowish white, mixed with a deep grey. These colours, though they appear at first sight confusedly blended together, yet on a close inspection will be found to be disposed like the streaks on the skin of the tiger, pointing from the back downwards, rising from a black list that runs from the head along the middle of the back to the tail. This animal is found in our larger woods; and is the most destructive of the carnivorous kinds in this kingdom. It inhabits the most mountainous and woody parts of these islands, living mostly in trees, and feeding only by night. It often happens, that the females of the tame kind go into the woods to seek mates among the wild ones. It should seem that these, however, are not original inhabitants of this kingdom, but were introduced

* British Zoology.

first in a domestic state, and afterwards became wild in the woods by ill-usage or neglect. Certain it is, the cat was an animal much higher in esteem among our ancestors than it is at present. By the laws of Howel, the price of a kitten, before it could see, was to be a penny; till it caught a mouse, twopence; and when it commenced mouser, fourpence. It was required, besides, that it should be perfect in its senses of hearing and seeing, be a good mouser, have the claws whole, and be a good nurse. If it failed in any of these qualities, the seller was to forfeit to the buyer the third part of its value. If any one stole or killed the cat that guarded the prince's granary, he was to forfeit a milch ewe, its fleece and lamb, or as much wheat as, when poured on the cat suspended by the tail (the head touching the floor), would form a heap high enough to cover the tip of the former. From hence we discover, besides a picture of the simplicity of the times, a strong argument that cats were not naturally bred in our forests. An animal that could be so easily taken, could never have been rated so highly; and the precautions laid down to improve the breed, would have been superfluous, in a creature that multiplies to such an amazing degree.

"In our climate, we know but of one variety of the wild cat; and from the accounts of travellers we learn, that there are but very few differences in this quadruped in all parts of the world. The greatest difference, indeed, between the wild and the tame cat, is rather to be found internally than in their outward form. Of all

other quadrupeds, the wild cat is, perhaps, that whose intestines are proportionably the smallest and the shortest. The intestines of the sheep, for instance, unravelled out, and measured according to their length, will be found to be above thirty times the length of its body; whereas the wild cat's intestines, being measured out, will not be found above three times the length of its body. This is a surprising difference: but we may account for it from the nature of the food in the two animals; the one living upon vegetables, which require a longer, and a more tedious preparation, before they can become a part of its body; the other living upon flesh, which requires very little alteration in order to be assimilated into the substance of the creature that feeds upon it. The one, therefore, wanted a long canal for properly digesting and straining its food; the other but a short one, as the food is already prepared to pass the usual secretions: however, a difficulty still remains behind; the intestines of the wild cat are, by one-third, shorter than those of the tame. How can we account for this? If we say that the domestic cat, living upon more nourishing and more plentiful provision, has its intestines enlarged to the quantity with which it is supplied, we shall find this observation contradicted in the wild boar and the wolf, whose intestines are as long as those of the hog or the dog, though they lead a savage life, and, like the wild cat, are fed by precarious subsistence. The shortness, therefore, of the wild cat's intestines is still unaccounted for; and most naturalists con-

sider the difficulty as inextricable. We must leave it, therefore, as one of those difficulties which future observation or accident are most likely to discover."

This animal is one of those few which are common to the new continent as well as the old. When Christopher Columbus first discovered that country, a hunter brought him one which he had discovered in the woods, which was of the ordinary size, the tail very long and thick. They were common also in Peru, although they were not rendered domestic. They are well known also in several parts of Africa, and many parts of Asia. In some of these countries they are of a peculiar colour, and inclining to blue. In Persia, Pietro della Valle informs us, that there is a kind of cat, particularly in the province of Chorazan, of the figure and form of the ordinary one, but infinitely more beautiful in the lustre and colour of its skin. It is of a grey blue, without mixture, and as soft and shining as silk. The tail is very long, and covered with hair six inches long, which the animal throws upon its back, like the squirrel. These cats are well known in France; and have been brought over into England, under the name of the *blue cat*, which, however, is not their colour.

Another variety of this animal is called by us the *lion cat*, or, as others more properly term it, the Cat of Angora. These are larger than the common cat, and even than the wild one. Their hair is much longer, and hangs about their head and neck, giving this creature the appearance of

a lion. Some of these are white, and others of a dun colour. These come from Syria and Persia, two countries which are noted for giving a long soft hair to the animals which are bred in them. The sheep, the goats, the dogs, and the rabbits of Syria, are all remarkable for the fine glossy length and softness of their hair; but particularly the cat, whose nature seems to be so inflexible, conforms to the nature of the climate and soil, loses its savage colour, which it preserves almost in every other part of the world, and assumes the most beautiful appearance. There are some other varieties in this animal, but rather in colour than in form; and in general it may be remarked, that the cat, when carried into other countries, alters but very little, still preserving its natural manners, habits, and conformation.

THE LION.

The influence of climate upon mankind is very small;* he is found to subsist in all parts of the earth, as well under the frozen poles as beneath the torrid zone: but in animals, the climate may be considered as congenial, and a kind of second nature. They almost all have their particular latitudes, beyond which they are unable to subsist; either perishing with a moderate cold, or dying for want of a frozen air, even in a tempe-

* This description is principally taken from M. Buffon; such parts as are added from others, I have marked with commas.

rate climate. The rein-deer is never seen to depart from the icy fields of the north; and, on the contrary, the lion degenerates when taken from beneath the Line. The whole earth is the native country of man, but all inferior animals have each their own peculiar districts.

Most terrestrial animals are found larger, fiercer, and stronger, in the warm than in the cold or temperate climates. They are also more courageous and enterprising, all their dispositions seeming to partake of the ardour of their native soil. The lion produced under the burning sun of Africa, is, of all others, the most terrible, the most undaunted. The wolf or the dog, instead of attempting to rival him, scarcely deserve to attend his motions, or become his providers. Such, however, of these animals as are bred in a more temperate climate, or towards the tops of cold and lofty mountains, are far more gentle, or, to speak more properly, far less dangerous, than those bred in the torrid valleys beneath. The lions of Mount Atlas, the tops of which are covered in eternal snows, have neither the strength nor the ferocity of the lions of Bildulgerid or Zaara, where the plains are covered with burning sands. It is particularly in these frightful deserts that those enormous and terrible beasts are found, that seem to be the scourge and the terror of the neighbouring kingdoms. Happily, indeed, the species is not very numerous, and it seems to be diminishing daily; for those who have travelled through these countries assure us, that there are by no means so many

there at present as were known formerly; and Mr Shaw observes, that the Romans carried fifty times as many lions from Libya in one year, to combat in their amphitheatres, as are to be found in the whole country at this time. The same remark is made with regard to Turkey, to Persia, and the Indies, where the lions are found to diminish in their numbers every day. Nor is it difficult to assign the cause of this diminution. It is obvious that it cannot be owing to the increase of the force of other quadrupeds, since they are all inferior to the lion, and consequently, instead of lessening the number, only tend to increase the supplies on which they subsist; it must, therefore, be occasioned by the increase of mankind, who is the only animal in nature capable of making head against these tyrants of the forest, and preventing their increase. The arms even of a Hottentot or a Negro make them more than a match for this powerful creature; and they seldom make the attack without coming off victorious. Their usual manner is to find out his retreat, and, with spears headed with iron, to provoke him to the combat. Four men are considered as sufficient for this encounter; and he against whom the lion flies receives him upon his spear, while the others attack him behind. The lion finding himself wounded in the rear, turns that way, and thus gives the man he first attacked an opportunity to recover. In this manner they attack him on all sides, until at last they entirely disable, and then dispatch him. This superiority in the numbers and the

arts of man, that are sufficient to conquer the lion, serve also to enervate and discourage him; for he is brave only in proportion to the success of his former encounters. In the vast deserts of Zaara, in the burning sands that lie between Mauritania and Negroland, in the uninhabited countries that lie to the north of Caffraria, and, in general, in all the deserts of Africa, where man has not fixed his habitation, the lions are found in great numbers, and preserve their natural courage and force. Accustomed to measure their strength with every animal they meet, the habit of conquering renders them intrepid and terrible. Having never experienced the dangerous arts and combinations of man, they have no apprehensions from his power. They boldly face him, and seem to brave the force of his arms. Wounds rather serve to provoke their rage than repress their ardour. They are not daunted even with the opposition of numbers: a single lion of the desert often attacks an entire caravan; and, after an obstinate combat, when he finds himself overpowered, instead of flying, he continues to combat, retreating, and still facing the enemy till he dies. On the contrary, the lions which inhabit the peopled countries of Morocco or India, having become acquainted with human power, and experienced man's superiority, have lost all their courage, so as to be scared away with a shout; and seldom attack any but the unresisting flocks or herds, which even women and children are sufficient to protect.

This alteration in the lion's disposition sufficiently shows that he might easily be tamed, and admit of a certain degree of education. "In fact, nothing is more common than for the keepers of wild beasts to play with this animal, to pull out his tongue, and even to chastise him without a cause. He seems to bear it all with the utmost composure; and we very rarely have instances of his revenging these unprovoked sallies of impertinent cruelty. However, when his anger is at last excited, the consequences are terrible. Labat tells us of a gentleman who kept a lion in his chamber, and employed a servant to attend it, who, as is usual, mixed his blows with caresses. This ill-judged association continued for some time, till one morning the gentleman was awakened by a noise in his room, which, at first, he could not tell the cause of; but drawing the curtains, he perceived a horrid spectacle—the lion growling over the man's head, which he had separated from the body, and tossing it round the floor. He immediately, therefore, flew into the next room, called to the people without, and had the animal secured from doing further mischief." However, this single account is not sufficient to weigh against the many instances we every day see of this creature's gentleness and submission. He is often bred up with other domestic animals, and is seen to play innocently and familiarly among them; and, if it ever happens that his natural ferocity returns, it is seldom exerted against his benefactors. As his passions are strong, and his appetites vehe-

ment, one ought not to presume that the impressions of education will always prevail; so that it would be dangerous in such circumstances to suffer him to remain too long without food, or to persist in irritating and abusing him: however, numberless accounts assure us, that his anger is noble, his courage magnanimous, and his disposition grateful. He has been often seen to despise contemptible enemies, and pardon their insults when it was in his power to punish them. He has been seen to spare the lives of such as were thrown to be devoured by him, to live peaceably with them, to afford them a part of his subsistence, and sometimes to want food himself rather than deprive them of that life which his generosity had spared.

It may also be said that the lion is not cruel, since he is so only from necessity, and never kills more than he consumes. When satiated he is perfectly gentle; while the tiger, the wolf, and all the inferior kinds, such as the fox, the polecat, and the ferret, kill without remorse, are fierce without cause, and, by their indiscriminate slaughter, seem rather to satisfy their malignity than their hunger.

The outward form of the lion seems to speak his internal generosity. His figure is striking, his look confident and bold, his gait proud, and his voice terrible. His stature is not overgrown, like that of the elephant or rhinoceros; nor is his shape clumsy, like that of the hippopotamus or the ox. It is compact, well proportioned, and sizeable; a perfect model of strength joined with

agility. It is muscular and bold, neither charged with fat nor unnecessary flesh. It is sufficient but to see him in order to be assured of his superior force. His large head surrounded with a dreadful mane, all those muscles that appear under the skin swelling with the slightest exertions, and the great breadth of his paws, with the thickness of his limbs, plainly evince that no other animal in the forest is capable of opposing him. He has a very broad face, that, as some have imagined, resembles the human. It is surrounded with very long hair, which gives it a majestic air. The top of the head, the temples, the cheeks, the under jaw, the neck, the breast, the shoulder, the hinder part of the legs, and the belly, are furnished with it, while all the rest of the body is covered with very short hair, of a tawny colour. "The length of the hair in many parts, and the shortness of it in others, serves a good deal to disguise this animal's real figure. The breast, for instance, appears very broad, but in reality it is as narrow and contracted in proportion as that of the generality of dogs and horses. For the same reason, the tail seems to be of an equal thickness from one end to the other, on account of the inequality of the hair with which it is encompassed; it being shorter near the insertion, where the flesh and bones are large, and growing longer in proportion as its real thickness lessens towards the point, where it ends in a tuft. The hair about the neck and the breast is not different from that on the rest of the body, except in the length of it; nor is each hair pointed as in most other animals,

but of an equal thickness from one end to the other. The neck is very strong, but not composed of one solid bone, as Aristotle has imagined; on the contrary, though very short and muscular, it has as many bones as the camel or the horse: for it is universal to all quadrupeds to have seven joints in the neck, and not one of them have either more or less. However, the muscles in the neck of the lion, that tie the bones together, are extremely strong, and have somewhat the appearance of bones; so that ancient authors who have treated of this animal, have mistaken the whole for a single bone. The tongue is rough, and beset with prickles as hard as a cat's claws; these have the grain turned backwards; so that it is probable a lion, if it should attempt to lick a man's hand, as we are told it sometimes does, would tear off the skin. The eyes are always bright and fiery, nor even in death does this terrible look forsake them. In short, the structure of the paws, teeth, eyes, and tongue, are the same as in a cat; and also in the inward parts these two animals so nearly resemble each other, that the anatomist's chief distinction arises merely from the size."

The lion has, as was observed before, a large mane, which grows every year longer as the animal grows older; the lioness is without this ornament at every age. This mane is not coarse or rough as in a horse, but composed of the same hair with the rest of the body, lengthened and shining. The mane, as well as the rest of the body, is of a yellow colour; nor is there ever any difference to be found in the colour of one lion

from that of another. What the ancients might have said concerning black lions, or white, or streaked like the tiger, is not confirmed by modern experience; so that these varieties have never been seen, or exist no longer.

It is usually supposed that the lion is not possessed of the sense of smelling in such perfection as most other animals. It is also observed, that too strong a light greatly incommodes him. This is more than probable from the formation of his eyes, which, like those of the cat, seem fitted for seeing best in the dark. For this reason he seldom appears in open day, but ravages chiefly by night; and not only the lion, but all other animals of the cat kind, are kept off by the fires which the inhabitants light to preserve their herds and flocks: the brightness of the flame dazzles their eyes, which are only fitted for seeing in the dark; and they are afraid to venture blindly into those places which they know to be filled with their enemies. "It is equally true of all this kind, that they hunt rather by the sight than the smell; and it sometimes happens that the lion pursues either the jackall or the wild dog while they are hunting upon the scent, and when they have run the beast down he comes in and monopolizes the spoil. From hence probably may have arisen the story of the lion's provider: these little industrious animals may often, it is true, provide a feast for the lion, but they have hunted merely for themselves, and he is an unwelcome intruder upon the fruits of their toil."

The lion when hungry boldly attacks all animals that come in his way; but as he is very formidable, and as they all seek to avoid him, he is often obliged to hide, in order to take them by surprise. For this purpose he crouches on his belly in some thicket, or among the long grass which is found in many parts of the forest: in this retreat he continues, with patient expectation, until his prey comes within a proper distance, and he then springs after it fifteen or twenty feet from him, and often seizes it at the first bound. If he misses the effort, and in two or three reiterated springs cannot seize his prey, he continues motionless for a time, seems to be very sensible of his disappointment, and waits for a more successful opportunity. In the deserts and forests, his most usual prey are the gazelles and the monkeys, with which the torrid regions abound. The latter he takes when they happen to be upon the ground, for he cannot climb trees like the cat or the tiger. He devours a great deal at a time, and generally fills himself for two or three days to come. His teeth are so strong that he very easily breaks the bones, and swallows them with the rest of the body. It is reported that he sustains hunger a very long time, but thirst he cannot support in an equal degree, his temperament being extremely hot; some have even asserted that he is in a continual fever. He drinks as often as he meets with water, lapping it like a cat, which, as we know, drinks but slowly. He generally requires about fifteen pounds of raw flesh in a day; he prefers that of live animals,

and particularly those which he has just killed. He seldom devours the bodies of animals when they begin to putrefy; and he chooses rather to hunt for a fresh spoil, than to return to that which he had half devoured before. However, though he usually feeds upon fresh provision, his breath is very offensive, and his urine insupportable.

The roaring of the lion is so loud, that when it is heard in the night, and re-echoed by the mountains, it resembles distant thunder. This roar is his natural note; for when enraged he has a different growl, which is short, broken, and reiterated. The roar is a deep hollow growl, which he sends forth five or six times a-day, particularly before rains. The cry of anger is much louder, and more formidable. This is always excited by opposition; and upon these occasions, when the lion summons up all his terrors for the combat, nothing can be more terrible. He then lashes his sides with his long tail, which alone is strong enough to lay a man level. He moves his mane in every direction; it seems to rise and stand like bristles round his head; the skin and muscles of his face are all in agitation; his huge eye-brows half cover his glaring eye-balls; he discovers his teeth, which are formed rather for destruction than chewing his food; he shows his tongue covered with points, and extends his claws, which appear almost as long as a man's fingers. Prepared in this manner for war, there are few animals that will venture to engage him, and even the boldest of the human kind are daunted at his

approach. The elephant, the rhinoceros, the tiger, and the hippopotamus, are the only animals that are not afraid singly to make opposition.

"Nevertheless, neither the leopard nor the wild boar, if provoked, will shun the combat; they do not seek the lion to attack, but will not fly at his approach; they wait his onset, which he seldom makes unless compelled by hunger; they then exert all their strength, and are sometimes successful. We are told of the combat of a lion and a wild boar, in a meadow near Algiers, which continued for a long time with incredible obstinacy. At last both were seen to fall by the wounds they had given each other, and the ground all about them was covered with their blood. These instances, however, are very rare, for the lion is in general the undisputed master of the forest. Man is the only creature that attacks him with almost certain success, with the assistance of dogs and horses, which are trained to the pursuit. These animals, that in a state of nature would have fled from the presence of the lion in an agony of consternation, when conscious of the assistance of man, become pursuers in their turn, and boldly hunt their natural tyrant. The dogs are always of the large breed; and the horses themselves, as Gesner assures us, must be of that sort called Charossi, or lion-eyed, all others of this kind flying at the sight of the lion, and endeavouring to throw their riders. When the lion is roused, he recedes with a slow proud motion; he never goes off directly forward, nor measures his paces equally, but takes an oblique course, going from one

side to the other, and bounding rather than running. When the hunters approach him, they either shoot or throw their javelins; and in this manner disable him before he is attacked by the dogs, many of whom he would otherwise destroy. He is very vivacious, and is never killed at once, but continues to fight desperately even after he has received his mortal blow. He is also taken by pit-falls, the natives digging a deep hole in the ground, and covering it slightly over with sticks and earth; which, however, give way beneath his weight, and he sinks to the bottom, from whence he has no means of escape. But the most usual manner of taking this animal is while a cub, and incapable of resistance. The place near the den of the lioness is generally well known by the greatness of her depredations on that occasion; the natives, therefore, watch the time of her absence, and, aided by a swift horse, carry off her cubs, which they sell to strangers, or to the great men of their country."

The lion while young and active lives by hunting in the forest, at the greatest distance from any human habitation, and seldom quits this retreat while able to subsist by his natural industry; but when he becomes old, and unfit for the purposes of surprise, he boldly comes down into places more frequented, attacks the flocks and herds that take shelter near the habitation of the shepherd or the husbandman, and depends rather upon his courage than his address for support. It is remarkable, however, that when he makes one of these desperate sallies, if he finds men and qua-

drupeds in the same field, he only attacks the latter, and never meddles with men, unless they provoke him to engage. It is observed that he prefers the flesh of camels to any other food; he is likewise said to be fond of that of young elephants: these he often attacks before their trunk is yet grown, and unless the old elephant comes to their assistance, he makes them an easy prey.

The lion is terrible upon all occasions, but particularly at those seasons when he is incited by desire, or when the female has brought forth. It is then that the lioness is seen followed by eight or ten males, who fight most bloody battles with each other, till one of them becomes victorious over all the rest. She is said to bring forth in spring, and to produce but once a-year. "With respect to the time of gestation, naturalists have been divided, some asserting that the lioness went with young six months, and others but two. The time also of their growth and their age have hitherto been left in obscurity; some asserting that they acquired their full growth in three years, and others that they required a longer period to come to perfection; some saying (and among this number is M. Buffon) that they lived to but twenty, or twenty-two years at most; others making their lives even of shorter duration. All these doubts are now reduced to certainty; for we have had several of these animals bred in the Tower; so that the manner of their copulation, the time of their gestation, the number they bring forth, and the time they take to come to perfection, are all pretty well known. Although the

lion emits his urine backwards, yet he couples in the ordinary manner; and, as was said before, his internal structure in almost every respect resembles that of a cat. The lioness, however, is upon these occasions particularly fierce, and often wounds the lion in a terrible manner. She goes with young, as I am assured by her keeper, no more than five months; the young ones, which are never more than two in number, when brought forth are about the size of a large pug-dog, harmless, pretty, and playful; they continue the teat for twelve months, and the animal is more than five years in coming to perfection. As to its age, from its imprisoned state we can have no certainty; since it is very probable that, being deprived of its natural climate, food, and exercise, its life must be very much abridged. However, naturalists have hitherto been greatly mistaken as to the length of its existence. The great he-lion, called Pompey, which died in the year 1760, was known to have been in the Tower for above seventy years; and one lately died there which was brought from the river Gambia, that died above sixty-three. The lion, therefore, is a very long-lived animal; and very probably, in his native forests, his age exceeds even that of man himself."

In this animal, all the passions, even of the most gentle kind, are in excess, but particularly the attachment of the female to her young. The lioness, though naturally less strong, less courageous, and less mischievous than the lion, becomes terrible when she has got young ones to

provide for. She then makes her incursions with even more intrepidity than the lion himself; she throws herself indiscriminately among men and other animals; destroys without distinction; loads herself with the spoil, and brings it home reeking to her cubs, whom she accustoms betimes to cruelty and slaughter. She usually brings forth in the most retired and inaccessible places; and when she fears to have her retreat discovered, often hides her tracks, by running back her ground, or by brushing them out with her tail. She sometimes, also, when her apprehensions are great, transports them from one place to another, and, if obstructed, defends them with determined courage, and fights to the last.

The lion is chiefly an inhabitant of the torrid zone, and, as was said, is always most formidable there; nevertheless, he can subsist in more temperate climates, and there was a time when even the southern parts of Europe were infested by him. At present he is only found in Africa and the East Indies, in some of which countries he grows to an enormous height. The lion of Bildulgerid is said to be nearly five feet high, and between nine and ten feet from the tip of the nose to the insertion of the tail. We have in the Tower at present one of above four feet high, that was brought from Morocco, which is the largest that for some time past has been seen in Europe. The ordinary size is between three and four feet, the female being, in all her dimensions, about one-third less than the male. There are no lions in America: the Puma, which has received

the name of the American Lion, is, when compared, a very contemptible animal, having neither the shape, the size, nor the mane of the lion; being known to be extremely cowardly, to climb trees for its prey, to subsist rather by its cunning than its courage, and to be inferior even to the animal that goes by the name of the American Tiger. We ought not, therefore, to confound this little treacherous creature with the lion, which all the ancients have concurred in denominating the king of beasts, and which they have described as brave and merciful. "Indeed, the numerous accounts which they have given us of this animal's generosity and tenderness, show that there must be some foundation for the general belief of its good qualities; for mankind seldom err when they are all found to unite in the same story. However, perhaps the caution of Aristophanes, the comic poet, is better followed in practice, who advises us to have nothing to do with this creature, but to let the lioness suckle her own whelps."*

THE TIGER.

"The ancients had a saying, *That as the peacock is the most beautiful among birds, so is the tiger among quadrupeds.*† In fact, no quadruped

* Ου χρη λεοντος σκυμνον εν πολει τρεφειν.

† Tantum autem præstat pulchritudine tigris inter alias feras, quantum inter volucres pavo.

can be more beautiful than this animal; the glossy smoothness of his hair, which lies much smoother, and shines with greater brightness than even that of the leopard; the extreme blackness of the streaks with which he is marked, and the bright yellow colour of the ground which they diversify, at once strike the beholder. To this beauty of colouring is added an extremely elegant form, much larger indeed than that of the leopard, but more slender, more delicate, and bespeaking the most extreme swiftness and agility. Unhappily, however, this animal's disposition is as mischievous as its form is admirable, as if Providence was willing to show the small value of beauty, by bestowing it on the most noxious of quadrupeds. We have, at present, one of these animals in the Tower, which to the view appears the most good-natured and harmless creature in the world: its physiognomy is far from fierce or angry; it has not the commanding stern countenance of the lion, but a gentle placid air; yet for all this it is fierce and savage beyond measure; neither correction can terrify it, nor indulgence can tame."

The chief and most observable distinction in the tiger, and in which it differs from all others of the mottled kind, is in the shape of its colours, which run in streaks or bands in the same direction as his ribs, from the back down to the belly. The leopard, the panther, and the ounce, are all partly covered like this animal, but with this difference, that their colours are broken in spots all over the body; whereas in the tiger they stretch lengthwise, and there is scarcely a round spot to

be found on his skin. Besides this, there are other observable distinctions: the tiger is much larger, and often found bigger than even the lion himself; it is much slenderer also in proportion to its size, its legs shorter, and its neck and body longer. In short, of all other animals, it most resembles the cat in shape; and if we conceive the latter magnified to a very great degree, we shall have a tolerable idea of the former.

In classing carnivorous animals, we may place the lion foremost; * and immediately after him follows the tiger, which seems to partake of all the noxious qualities of the lion, without sharing any of his good ones. To pride, courage, and strength, the lion joins greatness, clemency, and generosity; but the tiger is fierce without provocation, and cruel without necessity. The lion seldom ravages except when excited by hunger; the tiger, on the contrary, though glutted with slaughter, is not satisfied, still continues the carnage, and seems to have its courage only inflamed by not finding resistance.† In falling in among a flock or a herd, it gives no quarter, but levels all with indiscrimi-

* The remainder of this description is taken from M. Buffon, except where marked with commas.

[† There is a sort of cruelty in the devastations of the tiger unknown to the generous lion, as well as a poltroonery in its sudden retreat on any disappointment. "In the beginning of this century," says Mr Pennant, "some gentlemen and ladies, being on a party of pleasure, were seated under a shade of trees on the banks of a river in Bengal, when they observed a tiger preparing for its fatal spring; one of the ladies, with amazing presence of mind, laid hold of an umbrella, and unfurled it in the animal's face, which instantly retired, and thus gave the company an opportunity of removing from so terrible a neighbour. Another party, however, had not the same good fortune: a tiger darted among them while they were at dinner, seized on one gentleman, carried him off, and he never was more heard of."]

nate cruelty, and scarce finds time to appease its appetite, while intent upon satisfying the malignity of its nature. It thus becomes the scourge of the country where it is found; it fears neither the threats nor the opposition of mankind; the beasts both wild and tame fall equally a sacrifice to its insatiable fury; the young elephant and the rhinoceros become equally its prey, and it not unfrequently ventures to attack even the lion himself.

It is happy for the rest of nature that this animal is not common, and that the species is chiefly confined to the warmest provinces of the East. The tiger is found in Malabar, in Siam, in Bengal, and in all the countries which are inhabited by the elephant or the rhinoceros. Some even pretend that it has a friendship for, and often accompanies the latter, in order to devour its excrements, which serve it as a purge. Be this as it will, there is no doubt but that they are often seen together at the sides of lakes and rivers, where they are probably both compelled to go by the thirst which in that torrid climate they must very often endure. It is likely enough, also, that they seldom make war upon each other, the rhinoceros being a peaceable animal, and the tiger knowing its strength too well to venture the engagement. It is still more likely that the tiger finds this a very convenient situation, since it can there surprise a greater number of animals, which are compelled thither from the same motives. In fact, it is generally known to lurk near such places where it has an opportunity of choosing its prey, or rather of multiplying its massacres. When it has killed one, it often goes

to destroy others, swallowing their blood down at large draughts, and seeming rather glutted than satiated with its abundance.

However, when it has killed a large animal, such as a horse or a buffalo, it immediately begins to devour it on the spot, fearing to be disturbed. In order to feast at its ease, it carries off its prey to the forest, dragging it along with such ease, that the swiftness of its motion seems scarcely retarded by the enormous load it sustains. From this alone we may judge of its strength; but, to have a more just idea of this particular, let us stop a moment to consider the dimensions of this most formidable creature. Some travellers have compared it for size to a horse, and others to a buffalo, while others have contented themselves with saying that it is much larger than a lion. We have recent accounts of this animal's magnitude that deserve the utmost confidence. M. Buffon has been assured by one of his friends, that he saw a tiger in the East Indies fifteen feet long. "Supposing that he means including the tail, this animal, allowing four feet for that, must have been eleven feet from the tip of the nose to the insertion of the tail. Indeed, that which is now in the Tower is not so large, being, as well as I could measure, six feet from the tip to the insertion, and the tail was three feet more. Like all the rest of its kind, its motions are irregular and desultory; it bounds rather than runs; and like them rather chooses to take its prey by surprise than to be at the trouble of hunting it down." How large a leap it can take at once we may easily judge, by comparing

what it might do to what we see so small an animal as the cat actually perform. The cat can leap several feet at a bound; and the tiger, who is ten times as long, can no doubt spring proportionably.

"The tiger is the only animal whose spirit seems untameable. Neither force nor constraint, neither violence nor flattery, can prevail in the least on its stubborn nature. The caresses of the keeper have no influence on their heart of iron; and time, instead of mollifying its disposition, only serves to increase its fierceness and malignity. The tiger snaps at the hand that feeds it as well as that by which it is chastised: every object seems considered only as its proper prey, which it devours with a look; and, although confined by bars and chains, still makes fruitless efforts, as if to show its malignity when incapable of exerting its force."

To give a still more complete idea of the strength of this terrible creature, we shall quote a passage from Father Tachard, who was an eye-witness of a combat between a tiger and three elephants at Siam. For this purpose, the king ordered a lofty palisade to be built of bamboo cane, about a hundred feet square; and in the midst of this were three elephants appointed for combating the tiger. Their heads and a part of their trunk were covered with a kind of armour, like a mask, which defended that part from the assaults of the fierce animal with which they were to engage. As soon, says this author, as we were arrived at the place, a tiger was brought forth from its den, of a size much larger than we had ever seen before. It

was not at first let loose, but held with cords, so that one of the elephants approaching, gave it three or four terrible blows with its trunk on the back, with such force, that the tiger was for some time stunned, and lay without motion as if it had been dead. However, as soon as it was let loose, and at full liberty, although the first blows had greatly abated its fury, it made at the elephant with a loud shriek, and aimed at seizing his trunk. But the elephant, wrinkling it up with great dexterity, received the tiger on his great teeth, and tossed it up into the air. This so discouraged the furious animal, that it no more ventured to approach the elephant, but made several circuits round the palisade, often attempting to fly at the spectators. Shortly after, three elephants were sent against it, and they continued to strike it so terribly with their trunks, that it once more lay for dead; and they would certainly have killed it, had not there been a stop put to the combat.

From this account we may readily judge of the strength of this animal, which, although reduced to captivity, and held by cords, though first disabled, and set alone against three, yet ventured to continue the engagement, and even that against animals covered and protected from its fury.

"Captain Hamilton informs us, that in the Sundah Rajah's dominions there are three sorts of tigers in the woods, and that the smallest are the fiercest. This is not above two feet high, appears to be extremely cunning, and delights in human flesh. The second kind is about three feet high, and hunts deer and wild hogs, besides the little

animal which has been already described under the name of the Chevrotain, or Guinea-deer. The tiger of the largest sort is above three feet and a half high; but, although endowed with greater powers, is by no means so rapacious as either of the former. This formidable animal, which is called the Royal Tiger, (one of which we have at present in the Tower), does not seem so ravenous nor so dangerous, and is even more cowardly. A peasant in that country, as this traveller informs us, had a buffalo fallen into a quagmire, and while he went for assistance, there came a large tiger, that with its single strength drew forth the animal, which the united force of many men could not effect. When the people returned to the place, the first object they beheld was the tiger, who had thrown the buffalo over its shoulder, as a fox does a goose, and was carrying it away, with the feet upward, towards its den: however, as soon as it saw the men, it let fall its prey, and instantly fled to the woods; but it had previously killed the buffalo, and sucked its blood; and, no doubt, the people were very well satisfied with its retreat. It may be observed, that some East Indian buffaloes weigh above a thousand pounds, which is twice as heavy as the ordinary run of our black cattle; so that from hence we may form a conception of the enormous strength of this rapacious animal, that could thus run off with a weight at least twice as great as that of itself.

"Were this animal as common as the panther, or even as the lion himself, thus furnished as it is with the power to destroy, and the appetite for

slaughter, the country would be uninhabitable where it resides. But luckily the species is extremely scarce; and has been so since the earliest accounts we have had of the tiger. About the times of Augustus, we are assured by Pliny,* that when panthers were brought to Rome by hundreds, a single tiger was considered as an extraordinary sight; and he tells us, that the Emperor Claudius was able to procure four only, which shows how difficultly they were procured. The incredible fierceness of this animal may be, in some measure, the cause of the scarcity which was then at Rome, since it was the opinion of Varro, that the tiger was never taken alive:† but its being a native only of the East Indies, and that particularly of the warmer regions, it is not to be wondered that the species should be so few."

We may therefore consider the species of the true streaked tiger as one of the scarcest of animals, and much less diffused than that of the lion. As to the number of its young, we have no certain accounts; however, it is said that it brings forth four or five at a time. Although furious at all times, the female, upon this occasion, exceeds her usual rapacity; and if her young are taken from her, she pursues the spoiler with incredible rage: he, to save a part, is contented to lose a part, and drops one of her cubs, with which she immediately returns to her den, and again pursues him; he then drops another, and by the time she has returned with that, he generally

* Plin. Hist. Nat. lib. viii. c. 17.

† Tigris vivus capi adhuc non potuit. Var. de Ling. Lat.

escapes with the remainder. If she loses her young entirely, she then becomes desperate, boldly approaches even the towns themselves, and commits incredible slaughter. The tiger expresses its resentment in the same manner with the lion; it moves the muscles and skin of its face, shows its teeth, and shrieks in the most frightful manner. Its note is very different from that of the lion, being rather a scream than a roar; and the ancients expressed it very well when they said, that, *tigrides indomitæ raucant rugiuntque leones.*

The skin of these animals is much esteemed all over the East, particularly in China; the Mandarines cover their seats of justice in the public places with it, and convert it into coverings for cushions in winter. In Europe, these skins, though but seldom to be met with, are of no great value, those of the panther and the leopard being held in much greater estimation. This is all the little benefit we derive from this dreadful animal, of which so many falsehoods have been reported; as, that its sweat was poisonous, and the hair of its whiskers more dangerous than an envenomed arrow. But the real mischiefs which the tiger occasions while living are sufficient, without giving imaginary ones to the parts of its body when dead. In fact, the Indians sometimes eat its flesh, and find it neither disagreeable nor unwholesome.

There is an animal of America which is usually called the Red Tiger, but M. Buffon calls it the Cougar, which, no doubt, is very different

from the tiger of the East. Some, however, have thought proper to rank both together; and I will take leave to follow their example, merely because the cougar is more like a tiger in every thing, except the colour, than any other animal I know, having the head, the body, and the neck shaped very much in the same manner. Of these slight differences words would give but a very faint idea; it will be, therefore, sufficient to observe, that they are both equally slender, and are smaller, where the neck joins the head, than others of the panther kind. There is one at present in the Tower; and it seemed to me, as well as I could see it through the bars, that were it properly streaked and coloured, it would in all things resemble a small tiger. It is, however, of a very different colour, being of a deep brown, and the tail very long and pointed. It is rather darker on the back; under the chin it is a little whitish, as also on the lower part of the belly.

Of all the American animals, this is the most formidable and mischievous, even their pretended lion not excepted. It is said there are several sorts of them; and, as well as I can remember, I have seen one or two here in England, both differing from the present in size and conformation. It is, indeed, a vain endeavour to attempt to describe all the less obvious varieties in the cat kind. If we examine them minutely, we shall find the differences multiply upon us so much, that, instead of a history, we shall only be paid with a catalogue of distinctions. From such of them as I have seen within these last six years,

I think I could add two animals of this species that have not been hitherto described, and with the names of which he that showed them was utterly unacquainted. But it is a poor ambition that of being eager to find out new distinctions, or adding one noxious animal more to a list that is already sufficiently numerous. Were the knowing a new variety to open an unknown history, or in the least to extend our knowledge, the inquiry would be then worth pursuing; but what signifies mentioning some trifling difference, and from thence becoming authors of a new name, when the difference might have originally proceeded either from climate, soil, or indiscriminate copulation?

The cougars are extremely common in South America, and, where the towns border upon the forest, they make frequent incursions by night into the midst of the streets, carrying off fowls, dogs, and other domestic creatures. They are, however, but weak and contemptible compared to the great tiger, being found unable to cope with a single man. The Negroes and Indians are very dexterous in encountering them; and some, even for the sake of their skins, seek them in their retreats. The arms in this combat, seemingly so dangerous, are only a lance of two or three yards long, made of heavy wood, with the point hardened in the fire, and a kind of scimitar of about three quarters of a yard in length. Thus armed, they wait till the tiger makes an assault against the left hand, which holds the lance, and is wrapped up in a short cloak of baize. Some-

times the animal, aware of the danger, seems to decline the combat; but then its antagonist provokes it with a slight touch of the lance, in order, while he is defending himself, to strike a sure blow. As soon, therefore, as the creature feels the lance, it grasps it with one of its paws, and with the other strikes at the arm which holds it. Then it is that the person nimbly aims a blow with his scimitar, which he kept concealed, with the other hand, and hamstrings the creature, which immediately draws back enraged, but instantly returns to the charge. But then, receiving another stroke, it is totally deprived of the power of motion; and the combatant, killing it at his leisure, strips the skin, cuts off the head, and returns to his companions, displaying these as the trophies of his victory.

This animal, as we are assured, is often more successful against the crocodile, and it is the only quadruped in that part of the world that is not afraid of the engagement. It must be no unpleasant sight to observe, from a place of safety, this extraordinary combat between animals so terrible and obnoxious to man. Such as have seen it, describe it in the following manner. When the tiger, impelled by thirst, that seems continually to consume it, comes down to the river side to drink, the crocodile, which makes no distinction in its prey, lifts its head above water to seize it: the tiger, not less rapacious than the other, and unacquainted with the force of the enemy, boldly ventures to seize it, and plunges its claws into the eyes of the crocodile,

which is the only vulnerable part of its body: upon this the crocodile instantly dives under water, and the tiger goes down with him, for he will sooner die than let go his hold. In this manner the combat continues for some time, until the tiger is drowned, or escapes, as is sometimes the case, from its disabled enemy.

These animals are common in Guiana.* They were formerly seen swimming over in great numbers into the island of Cayenne, to attack and ravage the flocks and herds of the inhabitants. In the beginning they were a terrible scourge to the infant colony; but by degrees they were repulsed and destroyed, and are now seen no longer at that place. They are found in Brasil, in Paraguay, in the country of the Amazons, and in several other parts of South America. They often climb trees in quest of prey, or to avoid their pursuers. They are deterred by fire, like all other animals of the cat kind; or, more properly speaking, they seldom venture near those places where they see it kindled, as they are always sure of their enemies being near, and their nocturnal eyes are dazzled by the brightness of the blaze. From the description of this animal, one would be hardly led to suppose that its flesh was good for food, and yet we have several accounts which allege the fact, some asserting it to be superior even to mutton; however, what Monsieur Desmarchais observes is most likely to be true, namely, that the most valuable part of this animal is its skin,

* Buffon, vol. xix. p. 22.

and that its flesh is but indifferent eating, being generally lean, and usually having a strong fumet.

THE PANTHER, AND THE LEOPARD.

We have hitherto found no great difficulty in distinguishing one animal from another, each carrying its own peculiar marks, which in some measure serve to separate it from all the rest. But it is otherwise when we come to those of the cat kind that fill up the chasm between the tiger and the cat. The spots with which their skins are diversified are so various, and their size so equivocal, that it is no easy matter to distinguish the species, particularly as we have little else but the spots and the size to guide us in making the distinction. If we regard the figure and diversity of the spots, we shall find many varieties not taken notice of by any naturalist; if we are led by the size, we shall find an imperceptible gradation from the cat to the tiger. It would be vain, therefore, to make as many varieties in these animals as we see differences in spots or stature; it will be sufficient to seize the most general distinctions, and leave the rest to such as are fond of more minute disquisitions.

Of all this tribe, whose skins are so beautifully spotted, and whose natures are so mischievous, the Panther may be considered as the foremost. This animal has been by many naturalists mistaken for the tiger, and in fact it approaches next to it in

size, fierceness, and beauty. It is distinguished, however, by one obvious and leading character, that of being spotted, not streaked; for in this particular the tiger differs from the panther, the leopard, and almost all the inferior ranks of this mischievous family.

This animal, which M. Buffon calls simply the Panther, Linnæus the Pard, Gesner the Pardalis, and the modern Latins the Leopardus; this animal, I say, which goes by too many names, and which the English have indiscriminately called by the name of the Panther or the Leopard, may be considered as the largest of the kind, and is spotted in a manner somewhat different from those that are smaller. As those spots, however, make the principal difference between it and the lesser animals, which it otherwise resembles in shape, size, disposition, and beauty, I will first show these slight distinctions, and mention the names each animal has received in consequence thereof, and then proceed to give their history together, still marking any peculiarity observable in one of the species which is not found in the rest.

Next to the great panther, already mentioned, is the animal which M. Buffon calls the Leopard, a name which he acknowledges to be given arbitrarily, for the sake of distinction. Other naturalists have not much attended to the slight differences between this and the great panther, nor have they considered its discriminations as sufficient to entitle it to another name. It has hitherto, therefore, gone under the name of the Leopard, or Panther of Senegal, where it is chiefly

found. The differences between this animal and the former are these: the large panther is often found to be six feet long from the tip of the nose to the insertion of the tail; the panther of Senegal is not above four. The large panther is marked with spots in the manner of a rose, that is, five or six make a kind of circle, and there is generally a large one in the middle; the leopard of Senegal has a much more beautiful coat, the yellow is more brilliant, and the spots are smaller, and not disposed in rings, but in clusters. As to the rest, they are both whitish under the belly; the tail in both is pretty long, but rather longer in proportion in the latter than in the former. To these two animals, whose differences seem to be so very minute, we may add a third, namely, the Jaguar or Panther of America. This in every respect resembles the two former, except in the disposition of its spots, and that its neck and head are rather streaked than spotted. The jaguar is also said to be lower upon its legs, and less than the leopard of Senegal. These three quadrupeds, as we see, have but very slight differences, and the principal distinction used by M. Buffon is taken from the size; the first, as he says, is usually six feet long, the second four feet, and the last about three: however, it appears from the particular subjects of his description, that the panther in his possession was not above three feet seven inches long; that the leopard's skin which he describes was about four; and that the jaguar, at two years old, was between two and three feet long, which, when come to its full growth, would

no doubt be four feet long, as well as the two former. From hence, therefore, we may conclude, that the size in these animals is not sufficient to make a distinction among them; and that those who called them all three by the indiscriminate names of the leopard and the panther, if not right, were at least excusable. Of those which are now to be seen in the Tower, the jaguar, or the American panther, is rather the largest of the three, and is by no means the contemptible animal which M. Buffon describes it to be; the leopard is the least of them, and has by some travellers been supposed to be an animal produced between the panther and the ounce, an animal which resembles, but is less than any of the former. These three animals we may therefore rank together, as they agree pretty nearly in their robe, their size, their dispositions, and their ferocity.

We come next to an animal confessedly different from any of the former, being much smaller, and its colour more inclining to white. Its name, however, in our language, has caused no small confusion. It has been generally called by foreigners the Onza, or the Ounce, and this name some of our own writers have thought proper to give it; but others of them, and these the most celebrated, such as Willoughby, have given this name to a different animal, with a short tail, and known to the ancients and moderns by the name of the Lynx. I confess myself at a loss in this case whom to follow; the alteration of names should be always made with great caution, and never but in cases of necessity. If we follow Wil-

loughby, there will be an animal of the panther kind, very distinguishable from all the rest, left without a name; and if we recede from him, it will serve to produce some confusion among all the numerous class of readers and writers who have taken him for their guide: however, as he seems himself to have been an innovator, the name of the lynx having been long adopted into our language before, it was unnecessary to give the animal that bore it another name, and to call that creature an ounce which our old writers had been accustomed to know by the Latin appellation; for this reason, therefore, we may safely venture to take a name that has been long misapplied from the lynx, and restore it to the animal in question. We will therefore call that animal of the panther kind, which is less than the panther, and with a longer tail, the Ounce; and the lynx may remain in possession of that name by which it was known among all our old English writers, as well as by all antiquity.

The Ounce, or the Onza of Linnæus, is much less than the panther, being not at most above three feet and a half long; however, its hair is much longer than that of the panther, and its tail still more so. The panther of four or five feet long has a tail but of two feet, or two feet and a half. The ounce, which is but about three feet, has a tail often longer than the rest of its body. The colour of the ounce is also apparently different, being rather more inclining to a cream colour, which is deeper on the back, and whiter towards the belly. The hair on the back is an inch

and a half long, and that on the belly two inches and a half, which is much longer than that of the panther. Its spots are disposed pretty much in the same manner as the large panther, except that on the haunches it is rather marked with stripes than with spots.

Descending to animals of this kind that are still smaller, we find the Catamountain, which is the Ocelot of M. Buffon, or the Tiger Cat of most of those who exhibit it as a show. It is less than the ounce, but its robe more beautifully variegated. It is an American animal, and is about two feet and a half in length from the nose to the insertion of the tail. It is extremely like a cat, except that it is larger and slenderer, that its colours are more beautiful, and its tail rather shorter. The fur is of a reddish colour, the whole beautified with black spots and streaks of different figures. They are long on the back, and round on the belly and paws. On the ears are black stripes, which run across; but in other respects they entirely resemble those of a cat. These colours, however, which naturalists have taken great pains minutely to describe, are by no means permanent, being differently disposed in different animals of the same species. I remember to have seen an animal of this size, but whether of this species I will not pretend to say, some years ago, that was entirely brown, and was said also to have come from America.

From this tribe of the cat kind, with spotted skins and a long tail, we come to another with skins diversified in like manner, but with a shorter

tail. The principal of these is the Lynx, the name by which the animal was known to Ælian, among the ancients; and to all our old English writers among those of a more modern date. This name has been corrupted by the Portuguese into the word Ouze; and this corruption has been adopted by Ray, who has improperly called this animal the Ounce, after some of the foreign travellers. The first striking distinction between the lynx and all those of the panther kind, is in its tail, which is at least half as short in proportion, and black at the extremity. Its fur is much longer, the spots on the skin less vivid, and but confusedly mingled with the rest. Its ears are much longer, and tipped at the point with a black tuft of hair. The colour round the eyes is white, and the physiognomy more placid and gentle. Each hair of this animal is of three different colours: the root is of a greyish brown; the middle red, or of an ash colour; and the ends white. This whiteness at the ends takes up so small a part of the particular hair, that it does not prevent us from seeing the principal colour, which is that in the middle part; so that it only makes the surface of the body appear as if it was silvered over: however, the hair of which the spots consist has no white at the ends, and at the roots it is not quite so black as the other part. This animal is not above the size of the ounce, but is rather stronger built, and it has but twenty-eight teeth; whereas all the rest of the cat kind already mentioned have thirty.

Another animal of this kind is called the Syagush, or, as M. Buffon names it, the Caracal. It is a native of the East Indies, and resembles the lynx in size, in form, and even in the singularity of being tufted at the tips of the ears. However, the syagush differs in not being mottled as the lynx is; its fur, or rather hair, is rougher and shorter, its tail is rather longer, its muzzle more lengthened, its physiognomy more fierce, and its nature more savage.

The third and last animal that need to be mentioned of this kind, is that which M. Buffon calls the Serval, and which he has first described. It is a native of Malabar, resembling the panther in its spots, but the lynx in the shortness of its tail, in its size, and in its strong-built form.

These seem to be all the principal distinctions among animals of the panther kind, from the largest of this tribe down to the domestic cat, which is the smallest of all these fierce and mischievous varieties. In all, their nature seems pretty much the same, being equally fierce, subtle, cruel, and cowardly. The panther, including the leopard and the jaguar, or American panther, as they are the largest, so also are they the most dangerous of this kind; for the whole race of cats are noxious in proportion to their power to do mischief. They inhabit the most torrid latitudes of India, Africa, and America, and have never been able to multiply beyond the torrid zone. They are generally found in the thickest and the most entangled forests, and often near remote habitations, where they watch to surprise

all kinds of domestic animals. They very seldom attack man, even though provoked by him; they rather seem desirous of finding safety by flight, or by climbing trees, at which they are very expert. In this manner also they often pursue their prey; and being expert at seizing it as well above as below, they cause a vast destruction. Of all other animals these are the most sullen, and, even to a proverb, untameable. They still preserve their fierce and treacherous spirit; and at those places where they are exposed to be seen among others, we often observe, that while their keeper is familiar with the lion or the bear, yet he is apprehensive of the large panther, and keeps it bound with the shortest chain.

As the ounce differs from these in figure and size, so also it seems to differ in disposition, being more mild, tractable, and tame. These we frequently see as harmless and innocent as cats; and there is one at present in the Tower, with which the keeper plays without the smallest apprehension. I own I was not a little uneasy, at first, for the man, when he put his hand through the bars, and called the animal by its name; but was a good deal surprised to see the creature, which one might suppose irritated by long confinement, come gently up to him, stroke his hand with its face, in the manner of a cat, and testify the utmost gentleness of disposition. The ounce, therefore, is remarkable for being easily tamed, and, in fact, it is employed all over the East for the purposes of hunting. Not, indeed, but that panthers themselves are sometimes used for this

purpose; but they are never thoroughly subdued like the former, being usually brought to the field in a carriage, and kept chained and caged until they are shown the gazelle or the leveret, which is their prey. This they pursue rather by three or four great springs, than by running. If they seize it by this sudden effort, it finds no mercy; but if it escapes from their first effort, they never attempt to pursue, and appear quite disappointed and confounded at their mischance. It sometimes happens that they are so much enraged at it that they attack even their employer, and his only resource to avoid their fury, is to throw them some small pieces of meat which he has brought with him for that purpose.

The ounce, however, is not so dangerous, and is treated with more confidence and familiarity. It is usually brought to the field hoodwinked behind one of the horsemen. When the game appears, the ounce is instantly uncovered, and shown where it lies; upon which the fierce creature darts like an arrow to the place, and seizes it at once, or, missing it, remains motionless on the place. It would be vain to attempt retrieving its disgrace by continuing the pursuit; for although it bounds with greater agility than most other animals, yet it is slow and awkward in running, and has no means of finding the animal it pursues by the smell, as is common among those of the dog kind. From hence, therefore, it appears how much superior the European method of hunting is to that of the Asiatic; since whatever amusement this exercise affords must arise from the

continuance of the chase, and from the fluctuation of doubt and expectation, which raise and depress the pursuers by turns. All this an Asiatic hunter is deprived of; and his greatest pleasure can scarcely be more than what among us is called *coursing*, in which the dog pursues the animal, and keeps it constantly in view.

But it must not be supposed that it is from choice the Asiatics use this method of chase; for no doubt, were dogs serviceable among them, as they are in Europe, they would be employed for the same purposes. But the fact is, that the extreme heat of the tropical climates produces such universal putrefaction, and sends up such various and powerful scents, that dogs are at first bewildered in the chase, and at last come to lose the delicacy of their scent entirely. They are therefore but little used in those warm countries; and what could they avail in places where almost every other animal of the forest is stronger and more rapacious? The lion, the tiger, the panther, and the ounce, are all natural enemies to the dog, and attack him wherever he appears with ungovernable fury. The breed, therefore, in those places, would quickly be destroyed; so that they are obliged to have recourse to those animals which are more fitted to serve them, and thus convert the ounce to those purposes for which dogs are employed in Europe.

The Catamountain, or Ocelot, is one of the fiercest, and, for its size, one of the most destructive animals in the world. It is, as was before observed, a native of South America, and by no

means capable of the same education as the ounce, which it more approaches in size than in disposition. Two of these, from whom M. Buffon has taken his description, were brought over from Carthagena, and having been taken from the dam when very young, were afterwards suckled by a bitch. But before they were three months old, they had strength and ingratitude enough to kill and devour their nurse. Their succeeding fierceness and malignity seemed to correspond with their first efforts; for no arts could tame or soften their natures, and while they continued in their cages, they still testified an unceasing disposition for slaughter. When their food was given them, the male always served himself before the female ventured to touch a bit, and it was not till he was satisfied that the other began. In their savage state, these animals are still more destructive: having great strength and agility, they very easily find and overtake their prey, which they pursue among the tops of the trees, as well as on the ground; but what renders them still more mischievous, is their unceasing appetite rather for the blood than the flesh of their prey. They suck this with the greatest avidity, but frequently leave the carcass otherwise untouched, in order to pursue other animals for the blood in like manner. They generally continue on the tops of trees, like our wild cats, where they make their nest, and often bring forth their young. When they spy any animal they can master, and there are but few in the forest but what are in-

ferior, they dart down upon it with inevitable exactness.

The whole tribe of animals of the panther kind, with long tails, are chiefly inhabitants, as was said, of the torrid zone; but those of the short-tailed kind, and particularly the lynx, is principally found in the cold countries that are bordering on the pole. The lynx is chiefly to be met with in the north of Germany, Lithuania, Muscovy, Siberia, and North America. Those of the new continent, however, are rather smaller than in Europe, as is the case with almost all their quadrupeds; they are somewhat whiter also, but in other respects there is scarce any difference to be found among them.* This animal has been called by some *Lupus Cervarius*, or a creature compounded between a wolf and a stag; but for what reason is hard to guess: it no way resembles either, in shape or in disposition. In its nature it exactly resembles the cat, except that, being bigger and nearly two feet long, it is bolder and fiercer. Like the cat, it climbs trees, and seeks its prey by surprise; like the cat, it is delicate and cleanly, covering its urine with its paws; and it resembles the wolf in nothing except its cry, which often deceives the hunters, and induces them to think they hear a wolf and not a lynx. This animal, also, is rather more delicate than the cat; and after having once feasted upon its prey, will never return to it again, but hunts the woods for another. From hence may have

* Buffon.

arisen the common report of the lynx having of all other quadrupeds the shortest memory. This, however, is not the only idle story that has been propagated of it: as of its seeing with such perspicuity as to perceive objects through walls and mountains; as of having its urine of such a quality as to harden and become a precious stone; with several others, propagated by ignorance or imposture.

The Syagush and the Serval are both so like all the rest of the cat kind in disposition, that it is but repeating the same account once more to give their distinct history. As the lynx is found only in cold countries, so the syagush is to be met with only in the warm tropical climates. It is used in the same manner as the ounce for hunting; but it seems to have a property which the other has not, namely, that of being able to overtake its prey by pursuing it. Whether this is performed by having a finer scent than the former, or greater swiftness, we are not informed; being only told, that when it overtakes either the gazelle or the antelope, it leaps upon their backs, and getting forward to their shoulders, scratches their eyes out, by which means they become an easy prey to the hunters. Some have called this animal the lion's provider; and it is said that when it calls him to pursue his prey, its voice very much resembles that of one man calling another.* From hence we may conjecture that this animal pursues its prey in full cry, and that the lion only

* Thevenot, vol. ii. p. 114.

follows to partake or seize the spoil. The same account is given also of the jackall; and very probably it may be true, not only of these animals, but of some others, since it is natural enough to suppose that the lion will pursue whenever he is taught to discover his prey.

We had one of those animals a few years ago sent over from the East Indies, but it was not able to endure the change of climate, and it died in a very short time after it was brought to the Tower. Whether consumed by disease or not I cannot tell, but it seemed to be much slenderer than the cat or the lynx, and its ears were much longer; however, it is a very strong creature for its size, and has been known to kill a large dog in single combat:* nevertheless it is, like all of the cat kind except the lion, remarkable for its cowardice, and will never, except in cases of necessity, attack an animal that is its equal in strength or activity. For this reason, when brought into the field, and put upon a service of danger, it obstinately refuses, and is alert only in the pursuit of animals that are too feeble for resistance, or too timid to exert their strength.

From what has been said of this rapacious tribe, we perceive a similitude in the manners and dispositions of them all, from the lion to the cat. The similitude of their internal conformation is still more exact; the shortness of their intestines, the number of their teeth, and the structure of their paws. The first of this class is the Lion,

* Buffon.

distinguishable from all the rest by his strength, his magnitude, and his mane. The second is the Tiger, rather longer than the lion, but not so tall, and known by the streaks and the vivid beauty of its robe; including also the American tiger or cougar, distinguishable by its size, next that of the tiger, its tawny colour, and its spots. The third is the Panther and the Leopard. The fourth is the Ounce, not so large as any of the former, spotted like them, but distinguishable by the cream-coloured ground of its hair, and the great length of its tail, being above the length of its body. The fifth is the Catamountain or Tiger Cat, less than the ounce, but differing particularly in having a shorter tail, and being streaked down the back like a tiger. The sixth is the short tailed kind, namely, the Lynx, of the size of the former, but with a short tail, streaked, and the tips of its ears tufted with black. The seventh is the Syagush, differing from the lynx in not being mottled like it, in not being so large, and in having the ears longer, though tipped with black, as before. The eighth is the Serval, resembling the lynx in its form, and the shortness of its tail, streaked also like it, but not having the tips of its ears tufted. Lastly, the Cat, wild and tame, with all its varieties; all less than any of the former, but, like them, equally insidious, rapacious, and cruel.

This whole race may be considered as the most formidable enemy of mankind: there are others, indeed, stronger, but they are gentle, and never

offer injury till injured; there are others more numerous, but they are more feeble, and rather look for safety by hiding from man, than opposing him. These are the only quadrupeds that make good their ground against him, and which may be said to keep some kingdoms of the earth in their own possession. How many extensive countries are there in Africa, where the wild beasts are so numerous that man is deterred from living amongst them, reluctantly giving up to the lion and the leopard extensive tracts, that seem formed only for his delight and convenience!

END OF THE SECOND VOLUME.

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